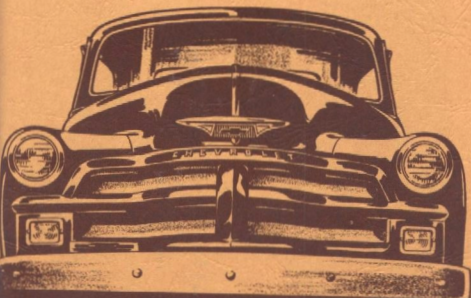


# *Chevrolet*

## **TRUCK OPERATORS MANUAL**



**CLASSIC CAR ARCHIVE 1954**

# OPERATOR'S MANUAL

For 1954

## Chevrolet Light, Medium and Heavy Duty Trucks

### INTRODUCTION

This operator's and owner's manual has been prepared to furnish information pertaining to the driving, care and maintenance of Chevrolet trucks as well as to provide technical data that may be of value or interest to truck owners.

The subject index at the right is a ready reference to the key subjects and will assist in finding any subject covered in the booklet.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

### Chevrolet Motor Division

General Motors Corporation  
Detroit 2, Michigan

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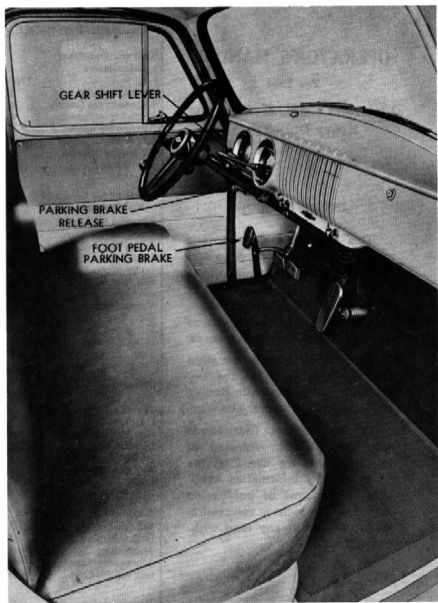
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*Fig. 1—Instruments and Controls— $\frac{1}{2}$  and  $\frac{3}{4}$  Ton*

# CHAPTER I

## DRIVER'S OPERATING INFORMATION

### BREAKING-IN PERIOD

The crankcase of the engine in this vehicle, as received, is filled with a light body "breaking-in" oil. Use this oil only during the breaking-in schedule shown below. It should not be used after completion of the breaking-in schedule.

Check the oil frequently during the first 500 miles and at the end of 500 miles, drain the crankcase—while hot—and refill using the grade of oil recommended in Lubrication section.

To properly break-in the moving parts of the engine do not drive faster than:

35 miles per hour for the first 100 miles

45 miles per hour for the next 200 miles

50 miles per hour for the next 200 miles

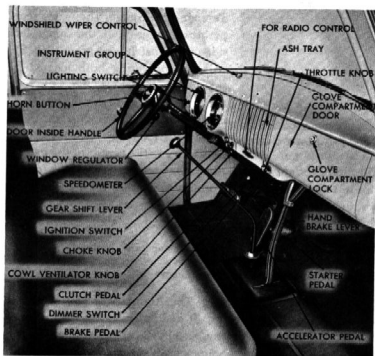


Fig. 2—Instruments and Controls—1½ and 2 Ton



## INSTRUMENTS AND CONTROLS

The type, location and operation of instruments and controls vary on different models and makes of vehicles; therefore, regardless of the experience an owner or driver may have had, it is advisable to familiarize one's self with the instrument and controls and their use before driving this new truck. The locations of various instruments and controls are shown in Figures 1, 2 and 22.

### Instrument Group

**Gasoline Gauge.** The electrically operated gasoline gauge is at the upper right side of the instrument group (fig. 3). It is wired through the ignition switch and, therefore, only indicates the amount of fuel in the tank when the ignition switch is turned on.



Fig. 3—Instrument Group

**Temperature Gauge.** The water temperature gauge is at the upper left side of the instrument group (fig. 3), with the operating bulb located in the water jacket at the left rear corner of the cylinder head. Normally, when the engine is thoroughly warmed up, the needle will register near the center of the gauge.

The driver should watch this instrument closely, as a quick rise in temperature usually indicates trouble. Should the temperature rise above "H," the engine should be stopped and a check made for cause of overheating.

**NOTE:** Do not remove the radiator cap when engine is excessively hot, do not put water in an overheated engine, and do not run engine when indicator is above "H."

**Ammeter (Battery Indicator).** The Ammeter is the lower left instrument in the group (fig. 3) and indicates the flow of current to and from the battery, except the current taken by the starting motor. Should the ammeter show discharge when the truck is being driven at medium speed, trouble is indicated

in the charging system and the battery will soon become discharged.

**Oil Pressure Gauge.** This instrument is in the lower right side of the instrument group (fig. 3), and indicates whether or not the oil pump is working, but does not indicate the amount of oil in the crankcase.

A low reading is normal at idling speeds with a warm engine and light oil; however, as the engine speed is increased the hand should register near the center of the gauge. In cold weather (especially with heavy oil) the hand may move over to the "60" mark at comparatively low engine speeds.

**NOTE:** Do not accelerate the engine excessively until the oil is sufficiently warm to permit a lower pressure. If the gauge does not show any pressure, stop the engine immediately and determine the cause.



Fig. 4—Speedometer

**Speedometer.** The speedometer is located to the right of the instrument group (fig. 4) and the hand moves around the dial indicating the speed of the vehicle in miles-per-hour. The figures visible through the opening near the center of the speedometer is the odometer and indicates the total mileage the truck has been driven. A red headlight upper beam indicator is located at the top center of the dial, while provision is made for a direction signal indicator at the bottom of the dial.



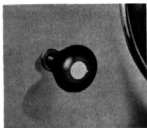
Fig. 5—Ignition Switch

## Switches

**Ignition Switch.** The ignition switch is located near the bottom of the instrument panel slightly below and to the right of the speedometer (fig. 5), and is connected in the low tension circuit between the battery and

the coil. This switch is used to make or break the ignition circuit when starting or stopping the engine.

The key is turned clockwise to turn the switch on and counterclockwise to turn the switch off.



*Fig. 6—Lighting Switch*

**Lighting Switch.** The lighting switch, located to the left of the instrument group (fig. 6), controls the instrument lamps, headlamps, parking lamps and tail lamp. When this switch is pulled out to the first "on" position the instrument lamps, parking lamps and tail lamp are lighted. When the switch is pulled out to the last position the headlamps replace

the parking lamps. Current for the lighting circuits passes through a thermal circuit breaker located on the lighting switch behind the instrument panel. In case all lights fail to operate, check for trouble at the thermal circuit breaker. The instrument lights can be dimmed or turned off by turning the light switch knob clockwise.

**Dimmer Switch.** The dimmer switch located on the toe-board to the left of clutch pedal (fig. 10) is used to switch the headlamp beam from "high" to "low" or "low" to "high." Each time the switch is depressed the light beam is reversed. A headlamp beam indicator is located between the 40 and 50 marks on the speedometer. When the lights are on upper beam a red light is visible through the indicator opening. Avoid use of upper beam when meeting other vehicles on the highway or in city traffic.

**Dome Lamp Switch.** The dome lamp switch is located at the left end of the dome lamp assembly directly above the rear window (fig. 7). Moving this switch backward turns the light on and moving it forward turns the light off.



*Fig. 7—Dome Lamp and Switch*

**Horn Button.** The horn button is conveniently located at the center of the steering wheel.

## Controls

**Choke Control.** The carburetor choke control knob on all models except those equipped with Hydra-Matic transmission is located to the right of the ignition switch on the recessed bottom of the instrument panel (fig. 8). The purpose of this

control is to close or partly close the carburetor choke valve. This restricts the air intake and produces a richer fuel mixture for starting, while at the same time opening the throttle by means of a fast idle link on the carburetor except on those models equipped with an updraft carburetor. All models equipped with Hydra-Matic transmission except Forward Control are provided with an automatic choke.

When the engine is warm and the weather is warm, it should not be necessary to use the choke when starting the engine. When it is necessary to use the choke for starting, it should be pushed part way in as soon as the engine starts and all the way in as soon as the engine will run smoothly without its use.

**CAUTION:** Excessive use of the choke will provide a fuel mixture too rich to burn. Some of this unburned fuel will leak past the pistons and dilute the engine oil and result in improper lubrication, excessive engine wear and poor performance.



*Fig. 8—Choke and Throttle Controls*

**Hand Throttle Control.** The throttle control knob on all models except those equipped with Hydra-Matic transmission is located on the right side of the recessed bottom of the instrument panel (fig. 8). Pulling out on the control knob opens the carburetor throttle to provide

a uniform engine speed above the idle setting. It is generally advisable to pull the hand throttle control out slightly when starting the engine, especially if the engine has a tendency to stall a time or two after starting. With exception of Forward Control models, no hand throttle is provided on models equipped with Hydra-Matic transmission.

**Cigarette Lighter.** The cigarette lighter on Suburban Carryall models is located to the right of the hand throttle control and is operated by pushing in. When heated it automatically clicks out for use.

**Starter Control.** A starter pedal is located near the center of the toe board to the right of the accelerator pedal on most truck models (fig.9). On cab-over-engine models, this pedal is

located on the flat floor area forward of the seat. A push-button starter control located on the instrument panel is provided on Forward Control and Hydra-Matic equipped models. Depressing this pedal or push-button engages the starting motor pinion with the teeth in the engine flywheel and closes the starter switch to provide an electrical circuit between the battery and starting motor, thereby cranking the engine. The starting motor draws considerable current from the battery, therefore, it should not be operated for more than 15 seconds at a time. If the engine does not start, locate the cause and correct it before the battery is run down.

**CAUTION:** The starter pedal or push-button must be released as soon as the engine starts and should never be depressed when the engine is running or serious damage may result.

**Accelerator Pedal.** The accelerator pedal, located to the left of the starter pedal (fig. 9), is used to open and close the carburetor throttle valve.

**Clutch Pedal.** On models equipped with 3- and 4-speed transmissions the clutch pedal is conveniently located for use by the driver's left foot (fig. 10). It is used to engage and disengage the clutch, thereby connecting the engine to or disconnecting it from the transmission and drive line to rear wheels.

**NOTE:** Never drive with the foot resting on the clutch pedal as this produces undue wear on the throwout bearing and other parts.



Fig. 10—Clutch and Brake Pedals



Fig. 9—Starter and Accelerator Pedals

**Brake Pedal.** The brake pedal is located to the right of clutch pedal (fig. 10). Depressing this pedal applies the hydraulic service brakes at all four wheels in proportion to the pressure applied on the pedal.

**Parking Brake.** On  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and 1 ton models, the parking brake is applied by a foot operated pedal located to

the left of the clutch pedal. This is connected by rod and cables to the rear brakes and thus actuates the shoes of the rear wheels. To release the brakes, a release control knob is mounted below the instrument panel.

On all 1½ and 2 ton models, a propeller shaft type parking brake is mounted at the rear of the transmission. The brake is hand operated with the lever extending up through the floor to the right of the gearshift lever except on C.O.E. (fig. 2). On C.O.E., the hand lever is to the left of the clutch pedal. Pulling the parking brake lever back applies the propeller shaft brake by means of mechanical linkage. To release the brakes, grip the two sections of the handle and pull lever back slightly, then move it forward.

This same propeller shaft type parking brake is available as an option on some 1 ton models, including the 1 ton Forward Control.

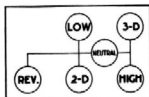


Fig. 11—Four Speed Transmission Shifting Diagram

**Gearshift Lever (4-speed Synchromesh Transmission)** extends to the left and back from transmission cover dome at center of floor (fig. 2). This lever is used to shift the transmission gears to the desired position. Figure 11 shows the lever knob positions when the transmission is in neutral, reverse and the four forward speeds.

To shift into reverse, disengage the clutch, move the lever to the left against the spring tension as far as it will go and pull it back into reverse position.

**Gearshift Lever (3-speed Synchromesh Transmission).** Gearshift control on all ½ and ¾ ton trucks with 3-speed transmission is located on the steering column (fig. 1). This mounting at the upper end of the steering column and the gearshift lever are similar to those used on the passenger car.

Figure 12 shows the gearshift pattern in neutral, reverse and three forward speeds.

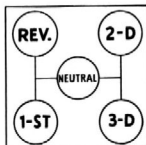


Fig. 12—Three-Speed Transmission Shifting Diagram

**Shift Control Lever (Hydra-Matic Transmission).** The shift control lever, located on the steering column, is used to select neutral, one of three forward speed ranges, or reverse. These positions are plainly marked on the indicator segment and are described in further details on pages 16-19.

**Cowl Ventilator Control Knob.** This knob located below the instrument panel to the right of the steering column (figs. 1 and 2) is used to open and close the cowl ventilator.

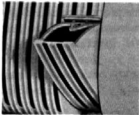


Fig. 13—Ash Tray

**Ash Tray.** A convenient tilt type ash tray is located in the instrument panel to the left of the package compartment (fig. 13). The tray is opened by pushing it forward at the bottom. To remove the ash tray for emptying, depress the circular snuffer at top of tray.

package compartment at the right end of instrument panel is controlled by a lock on the compartment door (fig. 14). When

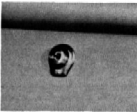


Fig. 14—Package Compartment Lock

**Instrument Panel Compartment Lock.** The door to the convenient lock is unlocked, depressing the lock cylinder releases the latch and the door opens. When the lock is locked the cylinder cannot be depressed. The key used for the door lock and ignition switch is used to lock and unlock the package compartment.

truck. These keys are used for locking and unlocking the right door, the package compartment and ignition. The key number is stamped on a "knockout" plug in each key (fig. 15). The

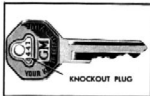


Fig. 15—Key

**Keys.** Two identical (octagonal head) keys are furnished with each dealer and the owner should make a record of this number so that the key can be easily replaced in case it is lost, and then the "knockout" plug should be removed so that unauthorized persons cannot obtain the key number and have a duplicate made.

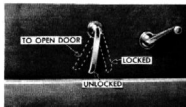
**Door Locks.** Chevrolet trucks are equipped with push-button theft-resisting door locks which provide a means of locking the cab when the truck is to be left unattended and a means of locking it from the inside.

The door lock cylinder is located in the push button in the right door handle (fig. 16). In the unlocked position, the key slot is vertical, and, when the push-button is locked, the slot is horizontal. In this horizontal position, the push-button cannot be depressed. The door is locked from outside by inserting a key in the push-button and turning it 90° so that key is horizontal. It remains horizontal after the key is removed.

To lock either door from the inside it is only necessary to move the inside remote control handle forward, (fig. 17). Pulling the inside handle to the rear unlocks the door even when it has been locked with a key.



*Fig. 16—Door Handle and Push-button Lock*



*Fig. 17—Door Remote Control and Window Regulator*

**Window Regulators.** The door windows are opened and closed by turning the window regulator handles located near the front upper corner of each door inner panel (fig. 17).

**Door Ventipane.** Operated directly by a turn down catch handle. Spring loaded friction device in the ventilator lower pivot holds the ventilator open to any position selected. Rain deflectors are used over the ventipane.

**Windshield Wiper.** The windshield wiper motor is mounted under the instrument panel and is vacuum operated from the engine. The control knob (fig. 18) located on the top surface of the instrument panel is used to regulate the wiper. Rotating the knob clockwise turns the wiper on and rotating it counterclockwise decreases wiper speed or turns it off completely.



*Fig. 18—Windshield Wiper Control Knob*



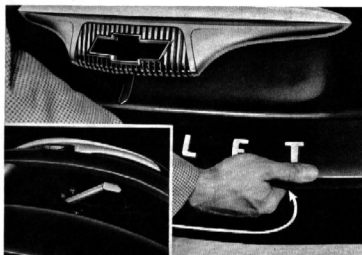
**Rear View Mirror.** An adjustable rear view mirror is mounted on the left side of cowl in a position so that the driver can get a clear vision along the left side of truck by looking at the mirror through the left door window



*Fig. 19—Seat Adjuster*

**Seat Adjuster.** The entire seat assembly can be moved forward or back to obtain the most comfortable position for the driver. As the seat is moved forward it raises and tips forward and as it is moved back it is lowered to accommodate a tall person.

Moving the adjuster handle forward (fig. 19) releases the seat adjuster lock so that the seat assembly can be moved forward or back as desired. Two coil springs assist in moving the seat forward.



*Fig. 20—Hood Lock Release*

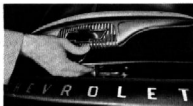
**Hood Lock and Safety Catch.** The hood is of the "alligator jaw" type and is held closed by a lock at the front. This lock can be released by reaching in below the upper grille bar in line with the left end of name plate and pulling the lever forward (fig. 20).

The safety catch can then be released by reaching under the nose of hood and pulling forward and up on the catch release (fig. 21).

The hood can then be lifted to the open position. The spring loaded hood support will assist in raising the hood and holding it open.

To close the hood, lower it to the safety latch position and then push down on nose of hood to lock it.

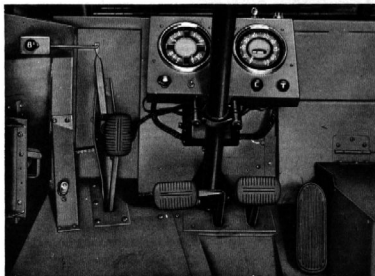
On cab-over-engine models, hood catches secure the front of the hood in position on each side, while a telescoping support arm holds it in the open position. To open hood, pull out and lift up external catch lever on each side of hood and lift up hood to locked position. To close hood, lift up hood to release support arm, lower to closed position, and engage hood catch.



*Fig. 21—Hood Safety Catch Release*

### **$\frac{3}{4}$ AND 1 TON FORWARD CONTROL UNITS**

Instrument and gauge mounting shown in Figure 22 is representative of control panels on bodies built by different body manufacturers. Operation of all instruments, gauges and control knobs are the same as outlined for the conventional truck models with the exception of the starter control.



*Fig. 22—Instruments and Controls— $\frac{3}{4}$  and 1 Ton Forward Control*

The starter control is of the push button solenoid type with the starter button located on the instrument panel face or top of panel. Release the starter button as soon as the engine starts and never press the button with the engine running or serious damage may result.

## PRE-STARTING INSPECTION

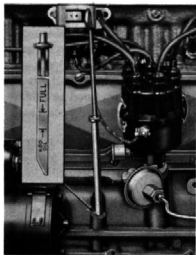


Fig. 23—Oil Gauge Rod

The following inspections are not necessary each time the vehicle is started providing the driver has recently driven the vehicle and is certain that attention is not required.

1. Raise the hood, remove the oil gauge rod (fig. 23), wipe oil from rod with clean cloth and replace. Remove gauge rod and note level of oil. If down to the "add oil" mark, oil should be added. See "Lubrication Instructions." Install oil gauge rod.

2. Remove radiator cap and check the level of coolant.

ant. If coolant is down a quart or more, water or anti-freeze should be added.

3. Check to make sure the tires are properly inflated. Underinflated tires wear rapidly and are subject to road damage.

4. Rear window, windshield, headlights, tail lamps and reflectors should be cleaned to provide clear vision and good lights.

## OPERATING INSTRUCTIONS FOR MODELS EQUIPPED WITH 3- AND 4-SPEED TRANSMISSIONS

### Starting the Engine

1. Place ignition key in switch and turn key to vertical position to turn on ignition.

2. Pull choke knob out part or all the way depending on climatic conditions to provide an engine speed just above idle.

If the engine is warm or in summer weather it is not generally necessary to use the choke at all. In extremely cold weather the choke should be pulled all the way out.

3. Make sure the transmission shift lever is in neutral. Depress the clutch pedal to relieve the load in the transmission.

4. Step on starter pedal, or on Forward Control models press button, to crank engine. **Remove foot from starter pedal or finger from starter button as soon as engine starts.** If engine does not start in 15 seconds, release pedal or button and check to see that the above operations have been performed correctly.

5. As soon as engine starts, push choke knob in part way and adjust throttle for smooth idle.

6. Note oil gauge and ammeter readings. Ammeter should show some charge unless engine is idling slowly. Oil gauge should show some pressure. In unusually cold weather the oil gauge needle may go over nearly to 60. If so, run the engine just above idling speed until the indicator hand drops to around the center of the gauge before driving vehicle. The choke knob should be pushed in all the way as soon as the engine is sufficiently warmed up.

### Shifting Two-Speed Rear Axle

The vacuum shift makes this operation comparatively simple as it is unnecessary to declutch while shifting. The control lever for the vacuum shift is located below the instrument panel and to the right of the steering column (fig. 24). Turning this lever also shifts the speedometer adapter to maintain reasonably accurate speedometer and odometer reading regardless of the axle ratio used.

To shift from low speed to high speed, move control lever to high speed position as indicated on the instrument panel "DECAL," release accelerator, pause a second to allow engine speed to drop down, then again step down on the accelerator.

To shift from high speed to low speed, move control lever to low speed position, release accelerator and again step down on accelerator.



Fig. 24—Two-Speed Axle Shift Control

# OPERATING INSTRUCTIONS FOR MODELS EQUIPPED WITH AUTOMATIC TRANSMISSION

## Shift Control Lever

The shift lever located just below the steering wheel can be moved to select neutral, one of three forward speed ranges, or reverse. These positions, which are plainly marked on the indicator segment (fig. 25), are utilized as follows:



*Fig. 25—Hydra-Matic Indicator—  
Neutral Position*

- N—Neutral (and starting)**
- 1-4—Normal forward driving**
- 1-3—For faster acceleration  
and in congested traffic**
- 1-2—For controlled power**
- R—Reverse (and parking)**

## Starting Engine

1. Place Hydra-Matic control lever in "N" (fig. 25). Starter will not operate with lever in any other position.

2. Place ignition key in switch and turn key to vertical position to turn on ignition.

3. a. On all models except Forward Control, press accelerator pedal down to toeboard, then release, to set automatic choke. When starting a warm or hot engine, hold accelerator pedal down halfway while engaging starter. **DO NOT PUMP ACCELERATOR PEDAL AT ANY TIME.**

b. On Forward Control models, pull choke knob out part way or all the way, depending on climatic conditions, to provide an engine speed just above idle. If the engine is warm or in summer weather, it is not generally necessary to use the choke at all. In extremely cold weather the choke should be pulled all the way out.

4. Engage starter. Release starter button as soon as engine starts. Avoid racing engine during warm-up.

**NOTE:** If engine does not start in five to ten seconds release starter button and check to see that operations have been performed correctly. A possible cause may be flooding. On models with automatic choke, press accelerator down **SLOWLY** to floor and hold it there while engaging starter. The automatic choke is inoperative in this position. See page 21 for procedure to be used in case of flooding on models equipped with manual choke.

5. On Forward Control models, push choke knob in part way as soon as engine starts and adjust throttle for smooth idle.

6. Note oil gauge and ammeter readings. Ammeter should show some charge unless engine is idling slowly. Oil gauge should show some pressure. In unusually cold weather the oil gauge needle may go over nearly to 60. If so, run the engine just above idling speed until the pressure drops to around the midpoint of the gauge before driving vehicle. Refer to page 19 for procedures when pushing vehicle to start engine. On Forward Control models, the choke knob should be pushed in all the way as soon as the engine is sufficiently warmed up.

### **Driving with Hydra-Matic**

#### **Operating in "1-4" Range (Automatically shifts from 1st thru 4th).**

The "1-4" Range (fig. 26) is used for normal forward driving, providing reduced engine speeds, and better driving comfort and fuel economy. With normal\* truck speed, a needed spurt of "passing" or "pick-up" speed can be obtained by depressing the accelerator completely (past detent). The drive will then change to a lower speed for a rapid pick-up, and will return automatically to higher speed as truck speed is increased.



*Fig. 26—Operating in "1-4" Range*

#### **Operating in "1-3" Range (Automatically shifts from 1st thru 3rd)**

The "1-3" Range (fig. 27) is used for better acceleration when driving in congested traffic. This range may also be used when ascending or descending long grades. At normal\* truck speed, a forced down shift to lower speed can be obtained by completely depressing accelerator pedal. Shift again to higher speed will automatically be made as truck speed increases or accelerator is released. Shift can be made from "1-4" to "1-3" at any truck speed on dry roads or from "1-3" to "1-4" at any time.



*Fig. 27—Operating in "1-3" Range*

\* The speeds at which a forced downshift can be made in "1-4" and "1-3" ranges vary according to tire sizes and axle ratios.

## Operating in "1-2" Range (Starts in 2nd speed)

The "1-2" range (fig. 28) is used for pulling through mud, sand, and snow, for going up grades or to provide braking on down grades. This position should be used to place vehicle in motion on icy roads when with light to medium throttle the truck will start in 2nd speed. At a truck speed of less than 2 mph, the shift from "1-4" or "1-3" range to the "1-2" range may be made to obtain braking by first releasing the accelerator, then moving the lever to the "1-2" position.



Fig. 28—Operating in "1-2" Range

**CAUTION:** Do not change from "1-4" or "1-3" position to "1-2" on icy or slippery roads while under way.

A forced downshift to 1st speed can be made while in "1-2" position with vehicle speed less than 5 mph. Completely depress accelerator pedal. Shift again to 2nd speed will automatically be made when vehicle speed increases or pedal is released.

## Moving and Stopping

Engine should be warmed-up to operating temperature at idle speed with lever in "N" position, particularly in cold weather. With a cold engine the vehicle may tend to creep when placed into a drive position while running at fast idle. A slight application of brake will hold vehicle until motion is desired. With the lever placed into any of the forward drive positions, the vehicle will move forward when accelerator is depressed. The shift events (1st to 2nd; 2nd to 3rd; 3rd to 4th) will occur at progressively higher speeds, depending upon accelerator pressure. With slight accelerator pressure, the shifts occur at lower speeds. As accelerator pedal is depressed, shifts occur at higher speeds.

To stop the truck, release the accelerator pedal and apply brakes. Do not move the lever from range selected. When ready to move again, release brakes and depress accelerator pedal as desired.

## Reversing

While it is advisable to be at a complete stop before engaging reverse, it is possible to shift into "R" (fig. 29) while vehicle is in slight (1 to 2 mph) forward motion. Avoid engaging reverse at forward speeds above 1 to 2 mph. This permits moving the lever between "R" and "1-3" or "1-4" with light accelerator pedal pressure, permitting rocking the vehicle when required to get out of mud, snow, or sand. Raise the lever when moving to reverse. When moving the lever, while raised, from reverse toward neutral, the lever will stop at the "1-4" position. This prevents unwanted "over-selecting" into neutral.



Fig. 29—Reverse Position

## Standing and Parking

Under no circumstances should the control lever remain in any other position than neutral when driver leaves the vehicle with engine running. In this case, always apply parking brake.

For additional safety while parking, turn off ignition key, then move lever to reverse position. This permits engagement of transmission providing "in gear" parking. When parking on any incline in this manner, hold vehicle with brakes for a few seconds to permit engagement of transmission parts.

## Push or Tow Start

If necessary to start engine by pushing or towing a short distance, set automatic choke or operate hand choke on Forward Control models as described on page 14, then move lever to "N" (Neutral) position. When vehicle speed reaches approximately 20 mph, turn on ignition switch and move lever to "1-4" position.

## Towing Vehicle

Truck must be towed only with rear wheels off the ground or propeller shaft disconnected at axle pinion shaft. On  $\frac{1}{2}$  ton models the propeller shaft cannot be disconnected for towing; therefore these models must be towed with rear wheels off the ground.



If truck is towed with rear wheels on ground or propeller shaft connected, transmission will be damaged.

### **Coasting**

Do not coast with lever in "N" (Neutral). Operating the vehicle in this manner may result in damage to the transmission.

## **COLD WEATHER OPERATION**

Cold weather presents many problems to the motoring public; however, the Chevrolet truck will be equally dependable in cold weather if given a minimum amount of attention.

1. The cooling system must be protected against freezing by the use of anti-freeze solutions (see "Cooling System" and "Anti-Freeze"). Also, each time the vehicle is to stand any length of time the system must be drained at the lower right corner of radiator, the left rear corner of cylinder block and at the oil cooler rear pipe on Hydra-Matic equipped models with a transmission oil cooler.

2. Light oil should be used in the engine (see "Engine Lubrication").

3. The battery should be kept fully charged to provide the additional power necessary to crank a cold engine and furnish a good spark. A discharged battery will freeze in extremely cold weather which will make battery replacement necessary.

4. The carburetor, fuel pump and fuel tank should be kept free from water which will freeze and restrict fuel flow.

5. The ignition system should be kept in good condition.

6. Assuming that the above items have been given normal attention, the engine should start promptly, even in extremely cold weather, by following the simple procedure described on page 14 for models equipped with conventional transmissions or page 16 for models equipped with Hydra-Matic transmissions. In abnormally cold weather the engine should be run slightly above idling speed for a few minutes to warm up the oil before driving the truck.

**NOTE:** Never race the engine until the oil gauge needle will stay around the midpoint of the gauge.

7. The Chevrolet cooling system is designed to maintain efficient engine-operating temperatures and to provide adequate

and uniform cooling even under the most severe operating conditions.

A thermostat placed at the water outlet of the cylinder head restricts and controls the water circulation as the engine warms up. Thermostats are available which are rated at 151 degrees or 180 degrees.

Truck cooling systems incorporate a by-pass cooling feature which enables the coolant to circulate in the engine even when the thermostat stops the flow to the radiator. This helps to keep the coolant temperature in the engine uniform.

## **HOT WEATHER OPERATION**

Hot weather does not generally present as many problems as cold weather; however, a little special attention will pay dividends in the form of economy and convenience.

1. Check the radiator regularly for sufficient coolant as the rate of evaporation is higher in hot weather.

2. Make sure the fan belt is in good condition and properly adjusted.

3. Keep the radiator area free of bugs and other things that restrict air circulation.

4. Have the water level in the battery checked at 10-day intervals or oftener, if necessary.

5. Starting a cool engine in hot weather does not present a problem and the procedure outlined under "Starting the Engine" should be followed.

A hot engine is easily flooded and may start hard. If the carburetor is flooded proceed as follows on models equipped with a manual choke:

- a. Turn on ignition.
- b. Pull hand throttle knob out about  $\frac{1}{2}$ ".
- c. **Do not** pull choke knob out or step on accelerator.
- d. Depress starter pedal or starter button without depressing accelerator.
- e. When engine starts, release starter, but do not accelerate engine.

On Hydra-Matic equipped models with automatic choke, see NOTE on page 16 for procedure to be followed in case of flooding.

## TIRE INFLATION

Tire pressures should be checked at least once a week and inflated according to the following table.

**Avoid underinflation** to prevent pinched tubes, rim bruises, excessive heat, and irregular or rapid wear.

**Avoid overinflation** to prevent tire ruptures, hard riding, irregular or rapid wear and reduction of skid resistance.

**Valve Caps** should always be installed and tightened firmly to prevent dust and water entering and damaging valve seats. The caps also act as an air seal.

### Inflation Table

6.00-16 6-Ply Rating.....	front 30 pounds, rear 36 pounds
6.00-18 6-Ply Rating.....	front 30 pounds, rear 36 pounds
6.50-16 6-Ply Rating.....	front 26 pounds, rear 36 pounds
6.50-20 6-Ply Rating.....	front 40 pounds, rear 50 pounds
6.50-20 8-Ply Rating.....	front 50 pounds, rear 65 pounds
6.70-15 6-Ply Rating.....	front 26 pounds, rear 30 pounds
7.00-17 6-Ply Rating.....	front 40 pounds, rear 45 pounds
7.00-17 8-Ply Rating.....	front 40 pounds, rear 55 pounds
7.00-18 8-Ply Rating.....	front 40 pounds, rear 55 pounds
7.00-20 8-Ply Rating.....	front 40 pounds, rear 55 pounds
7.00-20 10-Ply Rating.....	front 45 pounds, rear 70 pounds
7.50-17 8-Ply Rating.....	front 40 pounds, rear 60 pounds
7.50-17 10-Ply Rating.....	front 40 pounds, rear 75 pounds
7.50-20 8-Ply Rating.....	front 40 pounds, rear 60 pounds
7.50-20 10-Ply Rating.....	front 45 pounds, rear 75 pounds
8.25-18 10-Ply Rating.....	rear 65 pounds
8.25-20 10-Ply Rating.....	front 40 pounds, rear 65 pounds
8.25-20 12-Ply Rating.....	front 60 pounds, rear 75 pounds
9.00-18 10-Ply Rating.....	rear 65 pounds
9.00-20 10-Ply Rating.....	rear 65 pounds
10.00-18 12-Ply Rating.....	rear 70 pounds

### 15 Inch Tires

Ply Rating	Front	Rear
6	36 pounds	40 pounds
8	36 pounds	48 pounds

**Tire Rotation.** Proper inflation is the prime factor in satisfactory tire life; however, even better tire service can be obtained by rotating the tires every 3,000 to 5,000 miles.

# CHAPTER II

## DESCRIPTION, CARE AND MAINTENANCE

### PREVENTIVE MAINTENANCE

The following table will indicate some of the things which should be done at regular mileage intervals to assure your receiving the maximum in performance and economy.

Mileage	Lubri- cate Chassis ‡	Change Oil †	Clean Air Cleaner ‡	Clean Spark Plugs	Cross- Change Tires	Tune Engine	Com- plete Inspection By Dealer	Pack Front Wheel Bearings	Adjust Brakes
500		○							
1000	○						○		
2000	○	○	○						
3000	○								
4000	○	○	○						
5000	○			○	○	○	○		○
6000	○	○	○						
7000	○								
8000	○	○	○						
9000	○								
10000	○	○	○	○	○	○	○	○	○

After 10000 miles, repeat above schedule starting with 1000 mile operations at 11000, 21000, 31000 miles, etc.

Change Hydra-Matic Transmission Oil every 25000 miles.  
For Hydra-Matic maintenance instructions, see pages 42 and 76.

\*For complete instructions, see Charts on pages 82 to 89.

†For complete recommendations on changing oil and proper grade of oil to use, see pages 69 to 73.

‡Also crankcase ventilator and hydrovac air cleaners when used.

The following operations should be done as indicated:

Period	Check Battery	Check Air in Tires	Flush Cooling System	Add Anti-Freeze
Weekly	○	○		
Spring			○	
Fall			○	○

## ENGINE

**Description.** The Chevrolet six cylinder valve-in-head truck engines are the prime factor in Chevrolet's outstanding performance and economy. They are designed to give long trouble-free life. Chevrolet's full-pressure lubrication system provides the correct amount of lubrication to all moving parts.

Full stroke length water jackets, surrounding all cylinders, provide uniform cooling and prevent cylinder distortion which would cause undue wear and poor oil economy.

The water passages in the cylinder block and cylinder head properly direct the flow of water to provide uniform cooling of the engine.

**Care.** The engine oil level should be checked each time fuel is purchased and oil added when necessary. (See Lubrication Section.) The engine should be inspected occasionally for oil and water leaks and the necessary repairs made. Keep the engine clean externally.

**Valve Tappet Adjustment.** Valve tappet adjustment should be checked when the engine is thoroughly warmed up, preferably when the truck comes in from a run or after the engine has been run at a fast idle for 30 minutes.

1. Remove the four rocker arm cover attaching screws and rocker arm cover.

2. Lubricate the valve stems with engine oil to insure free movement of the valves in their guides.

3. Check the clearance between the rocker arms and the valve stems with a feeler gauge (fig. 30). The clearance should be as follows:

	Intake Valves	Exhaust Valves
All Engines .....	.010"	.020"

4. When adjustment is necessary loosen the rocker arm adjusting screw lock nut and turn the screw clockwise slightly to decrease clearance and counterclockwise to increase clearance (fig. 30). Tighten lock nut and recheck clearance.

5. Adjust remaining valve clearances in the same manner.



Fig. 30—Valve Tappet Adjustment

6. Install the rocker arm cover using a new gasket. Make sure cover seats properly on gasket and tighten retaining screws. Check for oil leaks.

## Carburetor

**Description—Downdraft Carburetor.** The downdraft carburetor used on all Chevrolet trucks except Cab-Over-Engine and Forward Control models, is comparatively simple in design and construction and requires very little care or attention. This carburetor has a vacuum controlled power jet and a throttle operated accelerator pump to aid in providing the desired economy and performance.

**Description — Updraft Carburetor.** The updraft carburetors used on the Cab-Over-Engine and Forward Control trucks are mounted below the manifold. They are equipped with a vacuum controlled power jet and a throttle operated accelerating pump to aid in providing the desired economy and performance.

**Care.** Tighten the carburetor to manifold and the manifold to cylinder head stud nuts to prevent air leaks. Keep the carburetor clean externally and have it completely overhauled at regular intervals so that foreign matter in the carburetor and worn parts will not affect correct carburetion.

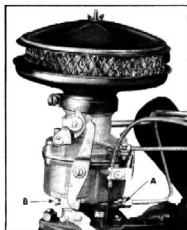


Fig. 31—Downdraft Carburetor Adjustment

**Maintenance — Downdraft Carburetor.** There are but two adjustments on the carburetor, one for idling mixture and the other for idling speed. These adjustments should be made together as changing the adjustment on one affects the other.

Run engine until it reaches normal operating temperature. On conventional transmission models push choke knob in all the way. Turn idling mixture adjusting screw "A" (fig. 31) in clockwise until it lightly

contacts stop, then back it off 1 to  $2\frac{1}{2}$  turns. Let engine idle at 450 to 500 revolutions per minute and turn idling mixture

adjusting screw "A" in or out as necessary to obtain a smooth idle.

Before adjusting idling speed make sure hand throttle knob and choke knob are pushed in all the way and accelerator and throttle linkage is free so that throttle lever stop screw "B" (fig. 31) is against stop. Turn screw "B" in or out to obtain an idling speed of 450 to 500 RPM. If necessary readjust idling mixture screw "A" as explained above to obtain a smooth idle.

On Hydra-Matic models, adjust to idle speed of 400-450 RPM with shift lever in "N" position.

**Maintenance—Updraft Carburetor.** Warm up engine to normal operating temperature and make sure choke and throttle knobs are in all the way. Adjust the engine speed to 450 to 500 RPM on conventional transmission models and 400-450 RPM with shift lever in "N" on Hydra-Matic models by turning the throttle stop screw "B" in or out as desired (fig. 32).

Turn the idle mixture adjusting screw "A" in or out as necessary to provide a smooth idling mixture. If the carburetor is in good condition the best idling mixture should be obtained with the idling mixture screw between  $\frac{1}{2}$  and  $1\frac{1}{2}$  turns open.

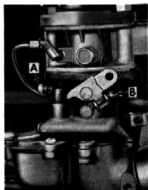


Fig. 32—Updraft Carburetor with Governor

## Air Cleaner

Air cleaners on all truck models operate primarily to remove dust and dirt from the air before it is taken into the carburetor and engine. All air cleaners used incorporate flame arresters.



Fig. 33—Servicing Standard Air Cleaner

**Maintenance—Standard Cleaner.** Under ordinary conditions where the truck is driven on hard surface roads, the air cleaner should be serviced every 2,000 miles. Under extremely dusty conditions, often encountered on gravel or dirt roads, the air cleaner should be serviced at more frequent intervals.

Servicing is accomplished by re-

moving the cover wing nut, the cover and the filter element (fig. 33). Slush the filter element in cleaning solvent until all foreign matter is removed, let it drain thoroughly and then dip it in clean engine oil. Let all surplus oil drain from element, wipe all dirt from cleaner body and cover, and reassemble cleaner.

**Maintenance—Heavy Duty Cleaner.** The oil level in the air cleaner reservoir should be checked at regular intervals and sufficient S.A.E. 50 oil added in summer and lighter oil added in winter. Adding oil and servicing the cleaner will vary greatly, depending upon operating conditions. Experience will tell when these services should be performed. Servicing of this cleaner, an important operation, must be performed as follows:

Loosen clamp screw and remove air cleaner assembly. Remove wing nut which retains the cover and remove cover and filter element assembly (fig. 34).

Empty the oil out of the cleaner reservoir and clean out all accumulated dirt. Wash filter element by slushing it in cleaning solvent until all foreign matter is removed and dry thoroughly. Wash cleaner body in cleaning solvent and wipe dry. Fill the oil reservoir to the oil level mark with S.A.E. 50 oil in summer and a lighter grade in winter.

Reassemble the filter element to the cleaner, being sure that the flange seats properly against the cleaner body. Install the cover, making sure that the gasket is clean and in good condition. Install and tighten wing nut.

Install the cleaner making sure that it fits tight and is set down securely. Tighten clamp.



*Fig. 34—Servicing Heavy Duty Air Cleaner*

### **Crankcase Filler and Ventilator**

All models except the C.O.E. trucks are oil filled through the valve rocker arm cover. Crankcase ventilation is accomplished through a ventilator tube assembly located at the



lower right side of the cylinder block on all except forward control models.

All C.O.E. trucks are oil filled through a combined oil filler and ventilator tube assembly also located at the lower right side of the cylinder block.

On Forward Control models positive ventilation is provided by a vacuum operated ventilator consisting of a vacuum pipe attached at one end to the oil filler assembly and at the other end to a spring loaded, variable opening ventilator valve at the intake manifold. Positive crankcase ventilation is also provided with the optional Jobmaster 261 engine on 2-Ton models. Have this unit cleaned by an Authorized Chevrolet Dealer at regular intervals of 10,000 miles or less, depending on operating conditions.



Fig. 35—Fuel Pump

## Fuel Pump

**Description.** The fuel pump is mounted on the right side of engine (fig. 35) and is operated by an eccentric on the engine camshaft. It pumps fuel from the fuel tank and delivers it to the carburetor.

**Care.** The fuel pump to engine attaching bolts should be kept properly tightened to prevent oil leaks.

The fuel pump glass bowl retaining nut should be kept properly tightened. When water or dirt is visible in the bowl it should be removed and cleaned as instructed below.

**Maintenance.** Loosen glass bowl retaining nut and remove glass bowl (fig. 36). Clean all water and dirt from bowl and pump. Remove the gasket and clean the gasket seat. Inspect and if necessary remove and clean filter screen. Install new gasket and the bowl. Tighten retaining nut



Fig. 36—Fuel Pump Cleaning

securely. Start engine and run until fuel pump bowl fills with gasoline. Inspect for leaks.

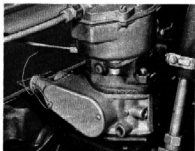
### Fuel and Vacuum Pump

A combination fuel and vacuum pump is available for all truck models as optional equipment when the truck is ordered, or through the dealer's service department. This combination fuel and vacuum pump assures continuous operation of windshield wipers even under sustained pulling at full throttle.

### Governor

**Description.** Governors are standard equipment on the 1½ and 2 ton school buses. They are also available on other models as special equipment when the truck is ordered, or through the dealer's service department.

The governor is installed between the carburetor and the intake manifold (fig. 37) and automatically governs the speed at which the engine and truck may be operated. The adjusting cap is locked with a seal which should be left in place or a new seal installed when adjusting the engine speed as this is the only protection against tampering by unauthorized persons.



*Fig. 37—Governor (in place)*

**Care and Maintenance.** The attaching bolts should be kept tight and the governor should be kept clean externally. If the governor requires any service attention the truck should be taken to an authorized service station.

### Ignition System

**Description.** The ignition system consists of the ignition switch to open and close the circuit, the coil to induce high voltage, the distributor to make and break the low tension circuit and distribute the high tension current to the correct spark plugs, the spark plugs to provide the spark in the combustion cham-

ber and the necessary wiring (fig. 38). The battery is the source of current for the ignition system when starting the engine or operating at idling speed. The generator furnishes the ignition current at higher speeds.

The distributor mounting provides a means of properly setting the initial ignition timing. The spark advance for various speeds and loads is controlled automatically by governor weights and vacuum control in the distributor. The vacuum control is connected to the carburetor.

The octane selector at the rear of the distributor mounting provides a means of advancing or retarding the ignition timing for the grade of fuel being used.

Chevrolet trucks use 14 millimeter spark plugs. These plugs operate at a more satisfactory temperature as they warm up more quickly, yet run at a lower temperature under severe operating conditions.

**Care.** The battery and generating system must be kept in good operating condition in order to obtain satisfactory operation of the ignition system. All wiring connections in the ignition circuit should be kept tight and free from dirt and corrosion. Keep the high tension wires free from grease and tight in the distributor cap and coil.

## Maintenance—

**Distributor Points.** Correct distributor point gap is very important. The distributor points are cleaned and adjusted as part of a good engine tune-up. If their condition is questioned, release the distributor cap clamps, remove cap and lift off rotor. Separate the points and inspect them for being pitted or badly burned. Clean the points with a breaker point file. If the points do not clean up with a few strokes of the file they should be replaced.

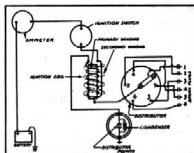
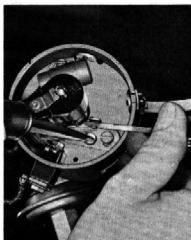


Fig. 38—Ignition Circuit



*Fig. 39—Adjusting Distributor Points*

check point opening. Install rotor, place cap on distributor and turn it until it drops into locking position. Clamp the cap in position.

**Point Replacement.** In case the points require replacement, loosen the inside terminal nut at the movable point spring and lift the point out. Remove the stationary point lock screw and remove point and arm. Place the new stationary point and arm in position and install the lock screw. Place the movable point on its shaft and position the spring on the terminal behind lock clip and tighten nut securely. Adjust new points to .019" and assemble distributor as explained above.

Reassemble the distributor cap and spark plug wires. Make sure that all terminals of the primary wire at the ignition coil and distributor are clean and tight.

**Ignition Timing.** Set the octane selector at "0" on the scale (fig. 40), and attach a Neon Timing Light to No. 1 spark plug. Start the engine and run it at idling speed. Loosen distributor clamp and rotate the distributor body clockwise or counter-

**Point Adjustment.** Crank the engine or place transmission in high gear and rock the truck forward enough to place the movable point cam follower on the peak of cam and check the point opening, using a feeler gauge. Correct adjustment on all Chevrolet truck engines is .019" with new points or .016" with used points. If necessary to adjust the points, loosen the stationary point lock screw and turn the eccentric screw as necessary (fig. 39).

Tighten lock screw and re-



*Fig. 40—Octane Selector*

clockwise until the steel ball in the flywheel lines up with the pointer on the flywheel housing. Tighten the distributor clamp screw.

**Octane Selector.** When changing to a grade of fuel with a higher or lower octane rating it may be advisable to advance or retard the spark slightly. Advance the spark to take advantage of higher octane fuel and retard it to prevent excessive detonation with lower octane rated fuels. Note the position of the octane selector scale (fig. 40), loosen the clamp bolt and move the distributor assembly toward advance or retard as desired and tighten the clamp bolt securely. By adjusting the spark in this manner it can be readjusted to the original setting when desired without special ignition timing equipment.

**Spark Plugs.** Clean the spark plugs thoroughly, using an abrasive type cleaner. If the porcelains are badly glazed or blistered, the spark plugs should be replaced. All spark plugs must be of the same make and number or heat range.



Fig. 41—Setting Spark Plug Gap

Adjust the spark gaps to .035", using a round feeler gauge (fig. 41).

**CAUTION:** In adjusting the spark plug gap never bend the center electrode which extends through the porcelain center; always make adjustment by bending the side electrode.

Install the spark plugs in the engine, using new gaskets.

If a tension wrench is used when installing the plugs, the proper tension is 20 to 25 foot pounds maximum. If a tension wrench is not available, screw each plug in "finger tight" and then with a wrench tighten each plug  $\frac{1}{2}$  to  $\frac{3}{4}$  turn beyond this.

**Manifold Heat Control Valve.** The manifold heat control valve is located on the inside of the exhaust manifold and is operated by the thermostatic spring, the center of which is attached

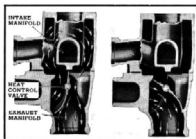


Fig. 42—Manifold Heat Valve

to a slot in the valve shaft and the outer end bears against a stop pin on the manifold.

When the engine is cold the valve is in the "heat-on" position as shown in the left half of Figure 42, and the hot exhaust gases are directed against the center of the intake manifold. As the engine warms up, the thermostatic spring moves the valve to the "heat-off" position as shown in the right half of Figure 42 and directs the exhaust gases away from the center of the intake manifold.

This thermostatic control results in maintaining the proper temperature of the incoming gases under all operating conditions.

The tension of the thermostatic spring is very important. When it is too tight the heat will not be turned off the intake heat riser as the engine warms up, with the result that the incoming gases will be expanded several times greater in volume than in normal operation and it will be impossible to get a full charge of gas and air into the cylinders. This condition reduces engine power and maximum speed; it will also cause detonation and overheating at higher speeds. Therefore, it is important that the thermostatic spring be wound up just enough to slip its outer end over the anchor pin in the manifold and no more (fig. 43). This is approximately  $\frac{1}{2}$  turn of the spring from its position when unhooked.

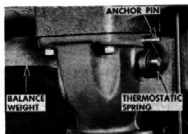


Fig. 43—Manifold Heat Valve Thermostatic Control

### Engine Tune-Up

In order to enjoy the performance and economy which Chevrolet built into the truck engine it must be kept properly tuned. Normally this service should be performed every 5,000 miles. A thorough engine tune-up requires the use of special equipment not generally in the hands of truck owners. For this reason it is advisable to have this service performed by a Chevrolet dealer. However for the benefit of those owners who perform many of their maintenance repair operations we will outline the operations which should be given attention when tuning an engine.

**Compression.** Compression tests should be made before performing tune-up operations to determine the necessity for internal repairs—an engine with poor or uneven compression cannot be successfully tuned.

**Spark Plugs.** Remove, clean and adjust (page 32).

**Battery.** Check state of charge by testing specific gravity (page 56).

**Battery Cables.** Clean and tighten cable terminals.

**Distributor.** Clean and adjust distributor points. Inspect cap and rotor (page 30).

**Ignition Timing.** Check and adjust ignition timing (page 31).

**Fuel Pump.** Clean fuel pump filter bowl and screen (page 28).

**Air Cleaner.** Clean air cleaner (page 26).

**Manifolds.** Tighten manifold bolts to guard against intake and exhaust leaks.

**Valve Clearance.** Check and adjust valve lash to proper clearance (page 24).

**Carburetor.** Adjust idling speed and mixture (page 25).

**Cooling System.** Tighten all hose connections. Check fan belt adjustment and the cooling system for coolant leaks.

**Road Test.** After the engine is tuned the truck should be road tested for performance. During this test the octane selector should be adjusted for the grade of fuel being used. For best performance and economy the octane selector should be set to produce a slight "ping" upon acceleration at wide open throttle.

## COOLING SYSTEM

**Description.** The cooling system consists of the radiator, fan, water pump, thermostat, water passages in cylinder block and cylinder head, and the necessary connections and fittings. The function of the cooling system is to keep the engine at the most efficient operating temperature under all driving conditions.

The thermostat, installed at the cylinder head outlet, restricts the flow of coolant to the radiator until a predetermined temperature is reached. During this restriction, a water by-pass in the cylinder block permits pump circulation through the

engine. As the coolant warms up, the thermostat opens to permit circulation through the radiator.

**Care.** The cooling system must be kept in good condition if it is to properly cool the engine under all operating conditions. The radiator cap should be removed and the coolant level checked frequently. If the coolant level is low, water or anti-freeze should be added. All models are equipped with a pressure type radiator cap.

**NOTE:** The volume of solution in a Chevrolet cooling system expands about one quart when its temperature is changed from 32° to 160°; therefore, the cooling system should be left from one pint to one quart low if filled cold, especially when anti-freeze is used, to prevent loss of solution through the radiator overflow pipe.

The fan belt tension should be checked occasionally and, if necessary, adjusted to provide  $\frac{7}{16}$ "- $\frac{1}{2}$ " deflection on  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and 1 ton models and  $\frac{3}{4}$ " deflection on  $1\frac{1}{2}$  and 2 ton models. The up or down movement from the normal position should be measured at a point midway between fan and generator pulleys (fig. 44).



Fig. 44—Fan Belt Adjustment

The system should be thoroughly checked for leaks. Tighten screw type hose clamps occasionally.

Twice a year the radiator, cylinder block, and, where applicable, the Hydra-Matic transmission oil cooler rear pipe drain cocks should be opened and all coolant removed. Using a water hose the cooling system should then be thoroughly flushed until the water runs clear. Then close drain cocks and refill cooling system.

The front of the radiator core should be checked occasionally for bugs, leaves, etc., which would restrict air circulation. These can be flushed out from the back side of radiator with an ordinary water hose and city water pressure.

## Maintenance—

**Flushing.** Scale and deposits in the cooling system which will not flush out can generally be removed by using a good cool-



ing system cleaning compound. When using a cleaning compound in the cooling system it is advisable to follow the instructions furnished with the particular brand of compound.

If cooling system cleaning compound will not thoroughly clean the system it is advisable to reverse-flush the system.

**Thermostat.** A faulty thermostat may cause abnormally high or abnormally low engine temperature. If the condition of the thermostat is questioned it can be removed and tested as follows:

1. Open radiator drain cock and drain out about half the coolant, which will bring the coolant level below the thermostat; close drain cock.

2. Loosen upper hose clamps and remove hose.

3. Remove the two cap screws that attach the water outlet to the thermostat housing. Remove water outlet, gasket and thermostat.

4. Heat a container of water to a temperature 25° above the temperature stamped on the thermostat and place thermostat in the water and see if it opens fully.

5. Place thermostat in water 10° below the temperature stamped on thermostat and see if thermostat fully closes.

6. If the thermostat does not fully open on test in Item 4 or fully close on test in Item 5, it should be replaced.

7. Place thermostat in housing, install water outlet using a new gasket, install attaching screws and tighten them evenly and securely.

8. Inspect the upper hose and if necessary replace it. Install the hose and tighten hose clamps securely.

9. Fill cooling system and check it for leaks.

## **Anti-Freezing Solutions**

In selecting an anti-freezing solution for winter operation the local conditions and the type of service should be considered. The following information is given to assist the truck owner in selecting the anti-freezing solution best suited to meet his own individual driving conditions.

**Alcohol.** Denatured alcohol and methanol are used extensively for anti-freezing solutions. The various types of alcohol anti-

freeze afford protection against freezing and have the advantage of wide distribution and low first cost.

There are, however, two important disadvantages. Alcohol is lost, especially on warm days and on hard driving, and, unless the solution in the radiator is tested periodically and sufficient alcohol added to replace the loss, the engine or radiator, or both, are likely to be damaged by subsequent freezing. The vehicle finish may be softened and damaged by contact with alcohol solutions or vapors. Alcohol accidentally spilled on the finish should be flushed off immediately with a large quantity of cold water without wiping or rubbing.

### GM METHANOL PROTECTION TABLE

Cooling System Capacity in Quarts	Quarts of GM Methanol Required for Anti-Freeze Protection at Temperatures shown below					
	3	4	5	6	7	8
16	13°	3°	-8°	-21°	-36°	
17	15°	6°	-4°	-16°	-29°	
18	16°	8°	-1°	-12°	-25°	
19	16°	9°	2°	-8°	-21°	-32°

See Page 90 for cooling system capacity.

A hot water heater adds about one quart to standard system capacity.

Other alcohol and methanol anti-freeze should be used in accordance with instructions issued by the anti-freeze manufacturer.

**Ethylene Glycol.** Ethylene glycol is, in first cost, more expensive than alcohol. Ethylene glycol anti-freezing solutions have the distinct advantage of possessing a somewhat higher boiling point than alcohol anti-freezing solutions and, consequently, may be operated at a higher temperature, resulting in a more effective performance of the heater.

"GM Ethylene Glycol" is especially treated and compounded for use in the cooling system. Other ethylene glycol preparations are available, but only those containing suitable corrosion inhibitors and compounded for use in automotive cooling systems should be used.

## GM ETHYLENE GLYCOL PROTECTION TABLE

Cooling System Capacity in Quarts	Quarts of GM Ethylene Glycol Required for Anti-Freeze Protection at Temperatures shown below							
	3	4	5	6	7	8	9	10
16	17°	10°	2°	-8°	-19°	-34°	-52°	
17	18°	12°	5°	-4°	-14°	-27°	-42°	
18	19°	14°	7°	0°	-10°	-21°	-34°	-50°
19	20°	15°	9°	2°	-7°	-16°	-28°	-42°

See Page 90 for cooling system capacity.

A hot water heater adds about one quart to standard system capacity.

Other ethylene glycol anti-freezes should be diluted in accordance with the instructions issued by the anti-freeze manufacturer.

**Glycerine.** Radiator glycerine, which is chemically treated to avoid corrosion in accordance with the formula approved by the Glycerine Producers' Association, is satisfactory for use in the cooling system.

**Servicing the Cooling System.** Before installing anti-freezing solution, the cooling system should be inspected and serviced for winter operation. The system should be thoroughly cleaned and all loose scale and iron rust removed.

Cylinder head bolts should be tightened to avoid the possibility of anti-freezing solutions leaking into the engine or exhaust gas blowing into the cooling system. Anti-freeze or water mixed with engine oil may form sludge, which will interfere with lubrication and, in some cases, may form varnish-like deposits which will cause gumming and sticking of the moving parts.

**NOTE:** Tightening cylinder head bolts may decrease valve clearance. Check and adjust valves if necessary (See Valve Adjustment).

It may be advisable to install new radiator and heater hose, especially when ethylene glycol or glycerine anti-freezing solutions are used. Ethylene glycol and glycerine have a tendency to shrink rubber that previously has been swollen by the absorption of water, and leaks may develop.

The water pump seal must be leak tight, not only to avoid loss of liquid, but to prevent air from being drawn into the cooling system. Aeration of the cooling liquid causes foaming and promotes oxidation which may result in serious corrosion.

After the anti-freezing solution has been installed, the entire system, including the hose connections, cylinder head gasket and pump, should be inspected regularly to insure that no leaks have developed.

The use of additional rust preventives, or inhibitors, is not recommended with "GM Anti-Freeze," "GM Ethylene Glycol," or with other anti-freeze preparations that have been chemically treated or compounded for use in automotive cooling systems.



*Fig. 45—Anti-Freeze Tester*

The freezing point of a solution containing both alcohol and ethylene glycol cannot be determined accurately by means of a hydrometer.

**Testing.** Some devices, used for testing anti-freezing solutions, will indicate the correct freezing point only when the test is made at a specific temperature. Other testers, provided with thermometers and tables, indicate the freezing points corresponding to readings made at various temperatures (fig. 45). Disregarding the temperature of the solution, when tested, may cause an error as large as 30° F.

Some testing devices are made to test only one kind of anti-freezing solution. Others have several scales and may be used for the corresponding kinds of anti-freeze.

## CLUTCH

**Description.** The clutch, which provides a means of disconnecting the engine from the transmission while shifting gears, is

of the single plate dry disc type. It consists of a pressure plate, cover, disc with facings, diaphragm type spring, throwout bearing, throwout fork and small correlated parts.

**Care.** The Chevrolet clutch requires very little care or attention; however, proper use of the clutch will contribute materially to the carefree service it will render.

Never drive with the foot resting on the clutch pedal as this causes constant wear on the clutch throwout bearing and may cause slight clutch slippage which will cause premature failure of the parts.



Fig. 46—Clutch Pedal Free Travel

The clutch pedal free travel should be checked at regular intervals by pushing the clutch pedal down with the fingers to determine the distance it moves before the throwout bearing engages the clutch diaphragm spring. This free travel should be  $\frac{3}{4}$ " to 1" (fig. 46). If adjustment is necessary, follow instructions below.

## Maintenance—

**Clutch Pedal Adjustment.** Push the clutch pedal down with the fingers and note the amount of pedal free travel. If this free travel is more than 1" or less than  $\frac{3}{4}$ " adjustment should be made.

Loosen the lock nut "A" (fig. 47) on clutch release rod and back off the adjusting nut "B" to increase the pedal free travel, or tighten the adjusting nut "B" to decrease the pedal free travel. When correct travel is obtained, tighten the lock nut "A" and recheck the pedal free travel.



Fig. 47—Clutch Pedal Travel Adjustment

## TRANSMISSION

**Description (3-Speed Transmission).** The sturdy synchro-mesh transmission with steering column gear shift control used as standard equipment on the  $\frac{1}{2}$  and  $\frac{3}{4}$  ton models provides three forward speeds and reverse. It is of helical gear type providing unusually quiet operation in all gears.

The gears are carburized and shot peened for additional strength and long life. The countergear is mounted on needle bearings. The clutch gear is supported by a heavy duty ball bearing at the front end of the transmission case. The front end of the mainshaft is supported by two sets of needle pilot bearings in the hollow end of the clutch gear and the rear end is carried by a ball bearing mounted in the rear of the transmission case.

**Description (Heavy-Duty 3-Speed Transmission).** A heavy duty 3-speed transmission, which incorporates greater gear reductions and more rugged construction than the standard 3-speed transmission, is available as optional equipment on all  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and 1 ton truck models where heavy duty applications do not require a 4-speed transmission. This transmission features wider gears with greater contact area, heavier mainshaft support bearings, larger double row roller countershaft bearings, and gear ratios better suited to truck operation.

**Description (4-speed Transmission).** This sturdy synchro-mesh transmission has increased durability and has synchro-mesh action into second, third and fourth speeds using helical gears, affording quieter operation and longer life.

The gears are drop forged steel, heat treated for strength and long life. The clutch gear is supported in the case on a ball bearing and the mainshaft is piloted at the front on roller bearings in the clutch gear and supported in the case at the rear by a large ball bearing. The countershaft is mounted at the front in a roller bearing and at the rear in a large ball bearing.

**Care and Maintenance.** Chevrolet 3 and 4-speed transmissions require very little care or maintenance. The lubricant level should be checked at regular intervals and lubricant added as necessary. See instructions in the Lubrication Section for further information on the maintenance of your transmission.

**Description (Hydra-Matic Transmission).** A new automatic transmission is available as optional equipment on  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1 ton truck models. This transmission provides greater operating convenience, particularly in continuous stop-and-go operation, and greater versatility for the vehicle in meeting all driving conditions by virtue of the range of gear ratios included.

Two separate options are available, one for  $\frac{1}{2}$  ton models, and another for  $\frac{3}{4}$  and 1 ton models. Each option has a separate set of ratios appropriate for the rated gross vehicle weight of the models in which it is used.

The transmission consists of a fluid coupling, which replaces the conventional clutch, combined with a hydraulically controlled automatic transmission having four-speeds forward and one reverse. Gear changing is accomplished automatically by the transmission in accordance with speed and load demands. See Driving with Hydra-Matic, pages 17-19.

**Care and Maintenance.** To maintain efficient operation of the Hydra-Matic Transmission, the fluid level should be checked every 1,000 miles and the fluid changed every 25,000 miles (see the Lubrication Section for complete information on these operations). Also an adjustment of the bands should be performed by your Chevrolet Dealer at the first 1500 mile interval.

### **Propeller Shaft and Universal Joints**

**Description.** The  $\frac{1}{2}$  ton models use one universal joint directly back of the transmission and a torque tube enclosed tubular propeller shaft that is splined to the pinion shaft. The universal joint is of the fully enclosed bushed type taking its lubrication from the transmission.

The  $\frac{3}{4}$  ton models use two propeller shafts and three universal joints. The front propeller shaft is a full Hotchkiss type of tubular construction. A propeller shaft bearing support assembly is located near the rear end of this shaft and gives the drive line the necessary support. This bearing support assembly is permanently lubricated at assembly and requires no further lubrication. The universal joints are of the needle bearing type. They are open joints with a single lubrication fitting to provide lubrication to all trunnion bearings through the drilled trunnion. The rear propeller shaft is of tubular construction.

All other models are fitted with tubular propeller shafts and needle bearing type open universal joints having a single lubrication fitting at each joint and drilled trunnions to distribute lubricant to all trunnion bearings. The short wheelbase C.O.E. has but one drive shaft and two universal joints, while the 2 ton 179" wheelbase models and the 199" and 212" wheelbase schoolbus chassis have three propeller shafts and four universal joints. All other models have two propeller shafts and three universal joints.

**Care.** When the universal joints are lubricated regularly as instructed in the lubrication section of this manual, they will require very little other care or maintenance. The open type universal joint "U" bolt nuts should be checked occasionally to make sure they are tight.

## REAR AXLE

**Description ( $\frac{1}{2}$ -Ton).** The  $\frac{1}{2}$  ton rear axle is of the semi-floating hypoid gear type. The pinion shaft is supported by a large roller bearing at the pinion end and a heavy double row ball bearing at the front end. This ball bearing takes the thrust load. The differential is mounted in the carrier on two barrel type roller bearings. A sturdy two pinion differential is used. The axle shafts are supported on roller bearings in the end of the housing. The shafts are locked in place by "C" locks which fit in grooves on the inner ends of the shafts and a thrust block between the ends of the two shafts.

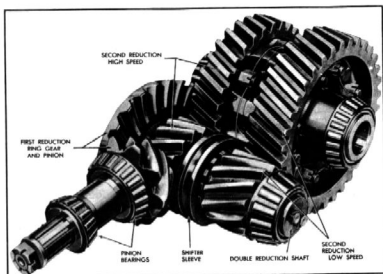
**Description ( $\frac{3}{4}$ , 1,  $1\frac{1}{2}$  and 2 Ton).** These models all use a sturdy full floating rear axle having straddle mounted pinion bearings, a four pinion differential and hypoid ring gear and pinion. An adjustable thrust pad is placed back of the ring gear in line with the pinion to avoid any possibility of distortion when starting under heavy loads. The differential is mounted in heavy duty barrel type roller bearings. The bearing caps are piloted to the carrier by dowels to provide additional rigidity.

**Description (2-Speed Axle).** The two-speed axle is of the double reduction type having a hypoid ring gear and pinion for the first reduction (fig. 48). The ring gear is mounted on a double reduction shaft having a high speed and a low speed floating reduction pinion that meshes with a respective high and a low speed reduction gear that is bolted to the differential.



case. An internal splined shifter sleeve fits on splines at the center of the double reduction shaft and can be shifted in either direction to engage splines on the reduction pinions to lock one of the pinions to the reduction shaft, thereby providing a positive drive in either high or low gear. The shifting of the shifter sleeve is accomplished by a vacuum shift unit mounted on the left side of differential carrier and controlled by a valve at the lower edge of the instrument panel.

Two axles with different ratios are available as optional equipment on 2 ton models. In addition to the previous axle with ratios of 6.13 to 1 and 8.1 to 1 which is also optional on 1½ ton models, a new axle with higher numerical ratios of 6.7 to 1 and 8.86 to 1 is available to provide improved heavy-duty operation.



**Fig. 48—Two-Speed Axle**

**Care.** The rear axles used on Chevrolet trucks require very little care or attention. The lubricant level should be checked at each chassis lubrication and the differential carrier and inspection cover bolts should be kept tight.

The axle flange to hub bolts on ¾ and 1 ton trucks should be kept properly tightened. If these bolts are found loose and grease has worked out between hub and axle flange, new axle shaft gaskets should be installed.



Fig. 49—Shaft to Hub Adjustment

On all 1½ and 2 ton trucks the axle shaft is spline attached to the wheel hub (fig. 49). External splines on the outer diameter of the shaft flange mesh with internal teeth in the hub. The shaft is retained in the hub by a hub cap. Should leakage occur simply remove hub cap, clean mating faces, install new gasket, replace hub cap and tighten hub cap retaining bolts securely.

### Rear Wheels and Bearings

**Description.** All models are equipped with demountable steel disc wheels. They are held securely on the axle flange or hub flange with special bolts and nuts. All models except the half ton have the wheel hub mounted on the outer end of axle housing with two large barrel type roller bearings. An adjusting nut which screws onto the end of axle housing provides a means of adjusting the bearings. The ½ ton semi-floating axle has the wheel bolted directly to the axle flange. The bearing is in the outer end of the axle housing and rides on a special race on the axle shaft just back of the axle flange.

**Care.** Keep the wheel to hub or axle flange bolt nuts securely tightened (fig. 50). In case the hub flange or wheel disc should become coated with oil or grease the wheel should be removed and all grease removed with cleaning solvent. Reinstall wheel and tighten bolts securely.



Fig. 50—Tightening Wheel Nuts

### FRONT AXLE

**Description.** All Chevrolet trucks use what is known as a reverse Elliott type "I" beam axle. The drop forged steel "I"

beam has the spring seats forged integral with the "I" beam.

Floating bushings are used between the kingpin and knuckle on the  $\frac{1}{2}$  ton models. Other models have the bushings pressed into the steering knuckles. The steering arms bolt to the knuckles.

**Care.** The front axle and its connections should be checked regularly for wear or looseness, especially for loose spring to axle "U" bolts, loose steering tie rod and drag link joints and for bent tie rod, drag link or steering arms.

**Alignment.** To provide easy steering, normal tire life and road stability and to prevent such troubles as shimmy, wander, tramp and tendency to lead to right or left, it is necessary to maintain correct front end alignment.

Since considerable expensive special equipment is required to properly check and adjust all the factors of front end alignment, it is advisable to take the truck to a Chevrolet dealer for this service when the front end alignment requires attention.

## Front Wheels and Bearings

**Description**—All Chevrolet trucks are equipped with demountable steel disc front wheels. The wheels are attached to the hub with special bolts and nuts. The hubs on the C.O.E. and 2 ton heavy duty models are mounted on the spindle with tapered roller bearings. The hubs on all other models are mounted on ball bearings.



Fig. 51—Adjusting Front Wheel Bearings

**Care.** Keep the wheel to hub mounting bolt nuts tight and the wheel bearings properly adjusted as instructed below.

**Wheel Bearing Adjustment.** 1. Jack up front end of vehicle and remove wheel and tire assembly. Remove hub cap and dust cap or the plate from end of hub. Remove cotter pin from end of spindle.

2. Tighten spindle nut to 33 ft. lbs. torque while rotating hub.

3. On models with hubs mounted on ball bearings (all except C.O.E. and 2 ton heavy duty models), back off spindle nut until alignment with nearest hole in spindle nut is ob-

tained, then install cotter pin. On C.O.E. and 2 ton heavy duty models using tapered roller bearings, back off spindle nut  $\frac{1}{8}$  turn minimum and install cotter pin if aligned with hole in spindle. If alignment with hole in spindle is not obtained, back off nut slightly until the nearest castellation in the nut lines up with a hole in the spindle.

4. Spin the drum to make sure that it rolls freely. Properly lock the cotter pin by spreading the end and bending it around. Install the hub plate or dust cap and hub cap. Replace wheel and tire assembly and remove jack.

## STEERING GEAR

**Description.** The modern, heavy-duty recirculating ball type steering gear used on Chevrolet trucks is designed for easy steering and road stability. The steering gear reduction is 26.24 to 1 on all trucks except Forward Control,  $1\frac{1}{2}$ -ton school bus and 2-ton models. Forward Control models have a reduction of 19.8 to 1 while the  $1\frac{1}{2}$ -ton school bus and all 2-ton have a reduction of 27.76 to 1.

**Care.** Check the steering gear to frame bolts regularly to make sure they are tight. Keep the pitman arm to pitman shaft nut tight. Keep the housing side and end covers tight to prevent grease leak and steering looseness. Add lubricant when necessary.

**Steering Gear Adjustment.** Steering gear adjustment is a very important operation and requires the use of a special checking scale; therefore, it is suggested that this service be performed by a Chevrolet dealer.

## BRAKE SYSTEM

**Description.** The self-energizing type braking system used on all Chevrolet trucks combines hydraulically operated service brakes with mechanically operated parking brakes.

The hydraulic service brakes provide brake action at all four wheels, while the mechanical parking brakes operate on the rear wheels of all truck models except the  $1\frac{1}{2}$  and 2 ton which are equipped with a propeller shaft brake.

The service brake system consists of the brake pedal, main cylinder, brake lines to all wheels, wheel cylinders, shoes with linings and brake drums. The parking brake on all models except

1½ and 2 ton, consists of the brake pedal, pull rods, cables and the toggle at the wheels which actuates the brake shoes.

Parking brake on 1½ and 2 ton consists of the brake lever, bell cranks, pull rod, brake drum attached to the transmission drive flange and internal and external brake shoes.

The hydraulic system must be kept full of fluid at all times in order to function properly. The main cylinder includes a reservoir for a reserve supply of fluid. This automatically keeps the system full of fluid as long as there is a reserve supply in the reservoir. Should the reservoir become empty or the hydraulic system be opened at any point, air will enter the system and affect the efficiency of the brakes. When this occurs the hydraulic system must be bled. See "Bleeding Hydraulic System."

**Care.** The Chevrolet braking system requires very little care; however, the system should be checked occasionally for indications of fluid leak. If leaks are found the necessary repairs should be made at once.



*Fig. 52—Hydraulic Brake  
Main Cylinder Location*

The main cylinder inspection plug in the left side of floor board should be removed and the top of main cylinder cleaned carefully (fig. 52). The filler cap should be removed and if the fluid is low in the reservoir, it should be filled to

a point about ½" from the top of reservoir with G. M. Super No. 11 Hydraulic Brake fluid. Check the filler cap to see that the vent holes are open. Install filler cap and inspection plug.

## **Bleeding Hydraulic System**

Only G. M. Hydraulic Brake Fluid Super No. 11 should be used when bleeding brakes.

The hydraulic brake system must be bled whenever a pipe line has been disconnected, when a leak has allowed air to enter the system or at any time the system has been opened. For satisfactory brake operation the system must be completely free of all air.

Bleeding should be accomplished by one of two methods, pressure or manual. Bleeding should be done on the longest

line first. On all except the 1½ and 2 ton models, the proper sequence is left rear, left front, right rear and right front. On the 1½ and 2 ton, the proper sequence is Hydrovac slave cylinder, Hydrovac valve bleeder valve, left rear wheel, right rear wheel, left front wheel and right front wheel.

### **Pressure Bleeding (Except 1½ and 2 Ton)**

1. Clean all dirt from top of main cylinder and remove filler plug.
2. Connect hose from bleeder tank to main cylinder filler plug opening and open valves at both ends of hose.

**NOTE:** Make sure fluid in tank is up to petcock above outlet and that tank is charged with 20 pounds air pressure.

3. Remove bleeder valve screw and screw bleeder hose into bleeder valve, placing other end of hose in a container having sufficient fluid to cover end of hose.
4. Open bleeder valve by turning ¾ turn in a counterclockwise direction and watch flow of fluid at end of bleeder hose.
5. Close bleeder valve tightly as soon as bubbles stop and fluid flows in a solid stream.
6. Remove bleeder hose and install bleeder valve screw in bleeder valve.
7. Repeat above operations at each wheel.

### **Pressure Bleeding (1½ and 2 Ton)**

1. Back off adjustment all the way on upper shoe on both rear wheels.
2. Clean all dirt from top of main cylinder, remove filler cap from main cylinder and fill the reservoir to the top of filler plug opening.
3. Connect pressure bleeder to main cylinder and open valve in the bleeder tank line.

**NOTE:** The bleeder tank should be charged with 25-35 pounds air pressure and must be kept within this range during the bleeding operation. The end of the bleeder tube must be in a bleeder jar or bottle and covered with fluid while performing all bleeding operations.

4. Connect bleeder tube to hydrovac bleeder valve No. 1, Figure 59, open bleeder valve and bleed until all air bubbles disappear (approximately ½ pint of fluid). Close bleeder valve.

5. Connect bleeder tube to hydrovac bleeder valve No. 2, Figure 59, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

6. Connect bleeder tube to front, rear wheel cylinder on left side, open bleeder valve and bleed until all air bubbles disappear (approximately  $\frac{1}{2}$  pint of fluid). Close bleeder valve.

7. Connect bleeder tube to front, rear wheel cylinder on right side, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

8. Connect bleeder tube to left front wheel cylinder, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

9. Connect bleeder tube to right front wheel cylinder, open bleeder valve and bleed until all air bubbles disappear. Close bleeder valve.

10. Adjust upper shoe on each rear wheel with pressure tank still connected. Push down hard on the brake pedal several times to centralize the shoes.

11. Disconnect pressure tank and readjust all brake shoes.

12. Apply approximately 75 lbs. pressure on the brake pedal and check the pedal clearance from the metal toe board to the forward edge of the pedal pad. This clearance should be a minimum of 5 inches. If reserve is less than 5 inches, re-bleed hydrovac and rear brakes in the sequence outlined above.

### **Manual Bleeding**

1. Clean all dirt from top of main cylinder and remove filler plug.

2. Install adapter and automatic filler J-713.

3. On all models except  $1\frac{1}{2}$  and 2 ton, remove bleeder valve screw and screw bleeder tube into bleeder valve. On  $1\frac{1}{2}$  and 2 ton models, connect bleeder tube to hydrovac bleeder valve No. 1, Figure 59. Place end of tube in a container having sufficient fluid to cover end of tube.

4. Open bleeder valve approximately  $\frac{3}{4}$  of a turn, depress the brake pedal a full stroke and allow it to return slowly making sure the end of the bleeder tube is under the surface of the liquid in the container. Continue operating the pedal, refilling the jar at the master cylinder when necessary, until

liquid containing no air bubbles emerges from the bleeder tube. Close bleeder valve.

5. On all models except 1½ and 2 ton follow bleeding operations as outlined in Steps 4 through 7 under Pressure Bleeding (Except 1½ and 2 Ton). On 1½ and 2 ton models follow bleeding operations as outlined in Steps 5 through 12 under Pressure Bleeding (1½ and 2 Ton), using the automatic filler in lieu of the pressure tank.

## **Maintenance—**

### **Brake Adjustment (½, ¾ and 1 ton, front and rear) (1½ and 2 ton, front).**

1. Raise truck until wheels rotate freely.

2. On ½, ¾, and 1 ton models only, disconnect parking brake cables from parking brake cross shaft outer lever (see Step 2 of "Parking Brake Adjustment," page 52). This precaution should be taken to eliminate possibility of brake shoes dragging in drum due to misadjustment of parking brake cables.

3. Remove adjusting hole covers from flange plate on all four wheels. Expand brake shoes by turning adjusting screw until a light drag is felt on the brake drum (fig. 53).

**NOTE:** Moving outer end of tool toward center of wheel expands shoes.

4. On ½ ton models turn the adjusting screw 7 notches in opposite direction on all four wheels. On all remaining models turn adjusting screw in opposite direction just enough to eliminate drag.

5. Replace adjusting hole covers.

6. On ½, ¾ and 1 ton models, after adjustment of foot brakes, set parking brake foot pedal in the fully released posi-



**Fig. 53—Adjusting Front Brakes**





**Fig. 54—Adjusting 1½ and 2 Ton Rear Brakes**

tion, connect parking brake cables, and adjust parking brake (see "Parking Brake Adjustment" below).

7. Lower truck to floor and test brakes.

#### **Brake Adjustment (1½ and 2 ton rear).**

1. Jack rear wheels clear of floor and remove adjusting hole covers from flange plate (two at each wheel).

2. Turn rear adjusting screw (fig. 54) until a moderate dragging contact is felt on the brake drum and then back off 3 notches.

**NOTE:** Moving outer end of adjusting tool toward center of wheel expands shoe.

3. Turn front adjusting screw until a light dragging contact is felt on the brake drum and then back off 3 notches.

4. Install adjusting hole covers.

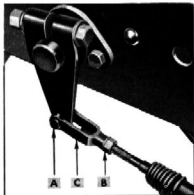
5. Repeat above operations on the other rear wheel and lower rear of truck to floor.

**Parking Brake Adjustment (All except 1½ and 2 ton).** The parking brake adjustment should be checked after each service brake adjustment.

1. Jack up rear wheels and set the parking brake pedal in the fully released position.

2. Loosen brake cable clevis lock nuts "B" (fig. 55) and then remove cotter pin and clevis pin "A" disengaging clevis "C" from cross shaft outer levers.

3. On ½ ton, adjust brake pedal pull rod clevis to give ⅛" clearance between cross shaft and frame cross member at center.



**Fig. 55—Parking Brake Adjustment—½, ¾, and 1 Ton**

On  $\frac{3}{4}$  and 1 ton, adjust brake pedal pull rod clevis to obtain cross shaft outer lever position (fig. 56).

4. Depress foot pedal  $1\frac{1}{2}$ " and then pull the cables out of the conduits by hand until a positive stop is felt. Adjust each cable

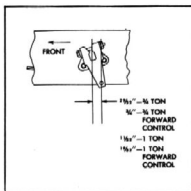


Fig. 56—Positioning Outer Lever

clevis until hole in clevis registers with hole in cross shaft outer lever and install clevis pins.

5. Depress foot pedal until heavy drag is felt at one wheel. Check opposite wheel for equal drag and readjust clevis if necessary. Return the pedal to the fully released position and check to see that the brakes do not drag.

6. Install cotter pins in clevis pins and tighten clevis lock nuts.

7. Lower truck to floor and test brakes.

### Parking Brake Adjustment ( $1\frac{1}{2}$ and 2 ton).

1. Set hand brake lever in the fully released notch of the ratchet sector.

2. Loosen lock nut "D" and draw up adjusting bolt "A" (fig. 57) to secure clearance between outer shoe facing and brake drum of .010"-.015" measured at a point directly above bolt "A." Then hold bolt and tighten lock nut "D" securely.

3. Loosen lock nut "C" and draw up nut "B" to secure .010"-.015" clearance between inner shoe facing and brake drum. Then hold nut "B" and tighten lock nut "C" securely.

4. Recheck both facing-to-drum clearances.

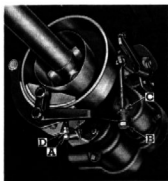
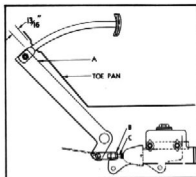


Fig. 57—Propeller Shaft Brake

**Brake Pedal Clearance (All except Forward Control).** Should be checked and adjusted as follows, when necessary.



**Fig. 58—Brake Pedal Clearance Adjustment**

1. Brake Pedal "A" (fig. 58) should be adjusted to give  $1\frac{3}{16}$ " clearance between top of pedal arm and underside of brake pedal toe pan depression.

2. Loosen check nut "B" at rear of clevis on main cylinder push rod "C."

3. Turn main cylinder push rod "C" by knurled portion ahead of boot, in the proper direction, to secure desired clearance.

4. Tighten check nut "B" against the clevis.

### **Brake Pedal Clearance (Forward Control).**

1. Remove front floor pan.

2. Remove cotter pin and clevis pin from upper end of brake pedal lever rod.

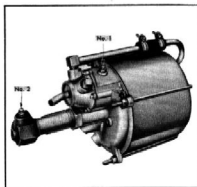
3. Adjust brake rod clevis to give 1" pedal to floor board clearance and install upper end to brake pedal, inserting clevis pin and cotter pin.

4. Replace front floor pan.

### **Hydrovac Power Brakes**

**Description.** The Hydrovac is standard equipment on the 2-ton and  $1\frac{1}{2}$ -ton special models and is also available as optional equipment on  $1\frac{1}{2}$  ton regular models.

The Hydrovac (fig. 59) consists of three operating units built into one assembly; namely, the control valve assembly, the vacuum power cylinder and the brake hydraulic cylinder.



**Fig. 59—Hydrovac**

With this system the engine vacuum is used to greatly increase the hydraulic pressure to the brake wheel cylinders. This provides unusual braking efficiency with comparatively light pedal pressure.

**Care.** Lubricate the vacuum cylinder according to instructions in the Lubrication Section.

The vacuum connections between the engine and the hydrovac should be checked for damage and the connections tightened occasionally. The hydrovac air cleaner should be removed, disassembled, cleaned and oiled at least twice a year and more frequently when driving on dusty roads.

## **SPRINGS AND SHACKLES**

### **Front Springs and Shackles**

**Description.** All Chevrolet trucks use leaf type front springs. All models except the Cab-Over-Engine and Forward Control have a threaded bushing and pin type shackle at the front and a plain bushing and bolt at the rear hanger. The C.O.E. and Forward Control models have the shackle at the rear and the fixed hanger at the front.

**Care.** The spring to "I" beam U-bolts should be checked occasionally to make sure they are tight. The shackles and hanger bolts should be checked for proper tightness. The shackles and hanger bushings should be lubricated as instructed in the Lubrication Section.

### **Rear Springs and Shackles**

**Description.** All models have leaf type rear springs with the shackle at the rear end of spring. The ½-ton uses a threaded type shackle while all other models use a clevis type shackle and heavy shackle pins to attach the spring to shackle and hanger.

Some models use a two-stage type rear spring to provide better riding qualities when lightly loaded and proper support for heavy loads. Some models that are to be subjected to heavy loads are equipped with auxiliary springs which mount above the regular springs and contact brackets on the frame member when handling heavy loads.

**Care.** Keep the spring to axle "U" bolts and the shackle bolts properly tightened. Lubricate the shackles and hangers according to instructions in the Lubrication Section.

## ELECTRICAL SYSTEM

**General Description.** The electrical system consists of the following units—generator, combined voltage and current regulator, starting motor, storage battery, distributor, ignition lock, ignition coil, ammeter, gasoline gauge, horn, lamps, switches, wiring and miscellaneous parts.

The ignition switch, coil, distributor and other miscellaneous parts making up the "Ignition System" were previously covered.

### Battery

**Description.** A 6-volt 100 ampere hour storage battery is located under the floor board on the right side of the vehicle on all models except the C.O.E., school bus and Forward Control units. Location is in engine compartment on school buses and Forward Control and under seat on C.O.E. All school buses have a 125 ampere hour battery under the hood while Forward Control units have a 100 ampere hour battery located on the frame at right side of engine.

**Care.** The following services should be performed at least once in two weeks.



*Fig. 60—Removing Battery Inspection Plate*

1. Turn the right rear corner of floor mat up out of the way, turn the battery inspection plate handle counterclockwise (fig. 60) and remove inspection plate.

**CAUTION:** Never allow an electric spark or flame near the battery, particularly the vent caps. Before working around the battery, ground the vehicle to reduce possibility of static spark. Bat-

teries give off highly combustible hydrogen gas when charging and for some time after. Also, avoid getting battery acid on clothing or other fabrics.

2. Remove filler caps from all three cells and add distilled water to bring the solution  $\frac{1}{4}$ " above the plates in each cell.

3. Reinstall and tighten filler caps, place battery inspection plate in position and turn the handle to lock it securely. Place floor mat in position.

In freezing weather the vehicle must be driven after adding water to properly mix it with the electrolyte and prevent freezing. It is also important to keep the battery in a fully charged condition in cold weather as a discharged battery will freeze

at a little below the freezing point of water (32 degrees F.).

The state of charge in the battery should be checked regularly. Your Chevrolet dealer will gladly perform this service; however, if it is inconvenient to take the truck to the dealer the state of charge in the battery can be checked by using a battery hydrometer as shown in Fig. 61. The hydrometer reading of a fully charged battery will be from 1.275 to 1.300.



*Fig. 61—Testing Battery with Hydrometer*

### **Battery Cables**

**Care.** The battery cable terminals must be kept clean and tight. Loose or corroded terminals cause hard starting and discharged batteries. When corrosion appears on the terminals they should be cleaned in a solution of baking soda and water or ammonia and water. After cleaning, the top of the battery should be flushed off with clear water. To reduce the tendency of the terminals to corrode, coat them with petrolatum.

### **Starter**

**Description.** The starting motor on all models except Forward Control units is designed to incorporate a manual shift drive mechanism which assures positive engagement of the starting motor pinion with the flywheel until the engine is started.

#### **Maintenance—**

Keep the terminal nut tight on the starting switch. Check the switch mounting screws, solenoid mounting and starting motor bolts periodically to make sure they remain tight.

### **Generating System**

**Description.** The generating system consists of the generator, voltage and current regulator, ammeter and necessary wiring.

The ammeter indicates whether current is being supplied to or removed from the battery.

The generator used on all Chevrolet trucks has sufficient capacity to supply all regularly used accessories and keep the battery fully charged providing the system is in good condition.

The generator output is controlled by the combined current and voltage regulator and circuit breaker. The circuit breaker points close when the generator voltage is higher than the battery voltage so that current can flow to the battery, and open when the generator voltage is lower than the battery voltage to prevent the battery from discharging through the generator.

The current regulator protects the generator by preventing the generator output from exceeding 45 to 51 amperes.

The voltage regulator protects the battery and electrical system by preventing the generator voltage from exceeding 7.0 to 7.7 volts.

**Care.** The connections in the entire generating circuit must be kept tight and free from corrosion or anything that will cause high resistance in the circuit. The generator should be lubricated according to instructions in the Lubrication Section.

### **Maintenance—**

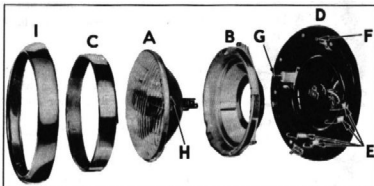
The maintenance services on the generating system, especially the voltage and current regulator, require the use of special equipment not generally available to the vehicle owner.

**NOTE:** Never tamper with the voltage and current regulator unless you have special testing equipment and are trained to do this kind of work.

At periodic intervals of approximately 5000 miles, the terminals, external connections and wiring, mounting, belt and pulley should be checked. The commutator and brush inspection can be made through the openings in the commutator end frame. If the commutator is dirty or if the brushes are badly worn, it is best to have your Chevrolet dealer make the necessary test and repairs.

### **Lamps**

**Description.** All Chevrolet trucks are equipped with "Sealed Beam" headlight units in which the light source, the reflector, lens and gasket are all assembled in a securely sealed unit. Figure 62 shows the component parts of the light. With this sealed unit dirt or moisture cannot enter the assembly; therefore, it retains its light reflecting ability indefinitely.



*Fig. 62—Headlamp Parts*

- A. Sealed Beam Unit
- B. Sub Body,
- C. Retainer Ring
- D. Lamp Housing
- E. Coil Springs (4)

- F. Vertical Adjustment Screw
- G. Horizontal Adjustment Screw
- H. Locating Lugs
- I. Headlamp Rim



*Fig 63—Removing Headlamp Rim*



*Fig. 64—Removing Sealed Beam Retaining Ring Screws*

## Maintenance—

Sealed beam units can be replaced as follows.

1. Loosen clamp screw and remove headlamp door rim by pulling it out at bottom and unhooking the top (fig. 63).

2. Remove the three screws holding the sealed beam retainer ring (fig. 64).

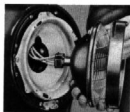
**NOTE:** Do not disturb the headlamp adjusting screws on the top and left side of unit (fig. 64).

3. Pull the sealed beam and retainer ring away from lamp body and remove retainer ring (fig. 65).

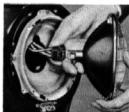
4. Disconnect wiring plug from sealed beam unit (fig. 66).

5. Connect wiring plug to new sealed beam unit, place the retaining ring around unit, push the assembly into place and install the three attaching screws.





*Fig. 65—Removing Sealed Beam Retaining Ring*



*Fig. 66—Disconnecting Sealed Beam Plug Connector*

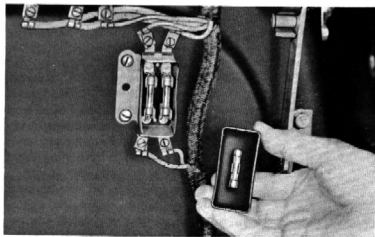
6. Hook the headlamp rim at the top and pull it down into place. Install and tighten the clamp screw.

Proper aiming of these powerful lights is most important to assure sufficient illumination of the highway without blinding other motorists. When light aiming is necessary it is advisable to contact a Chevrolet dealer who has special equipment for this purpose.

The parking, stop and tail lamp bulbs may be reached by removing the rim clamp screws, rim and lens. Push the bulb in slightly and turn it counterclockwise as far as possible and pull it out of socket. Push new bulb into place and turn it clockwise to lock it. Install rim and lens.

## Fuse Box

**Description.** The fuse box on all models except Forward Control units is mounted on the left side of the cowl (fig. 67). Fuse box on Forward Control units is generally located above the steering column under the instrument panel. Twenty ampere



*Fig. 67—Fuse Box*



ALL WIRES MARKED \*  
ARE USED FOR BID ONLY

ALL MODELS  
EXCEPT 3743 & 3943

**ADULTS ONLY**

**Fig. 68—Wiring Diagram**

fuses are used for the tail light and stop light circuits. All other lights are protected by a circuit breaker located in the lighting switch.

The fuse box cover is a snap on type with a spare fuse clip containing one fuse located inside the cover.

**Fuse Replacement.** In case tail or stoplights should fail to operate it is advisable to check the fuse in that circuit. Remove the cover (fig. 67), pull the fuse straight out of the fuse clips and replace it with a fuse known to be in good condition. Place the cover in position and snap into place. In case the new fuse burns out as soon as the circuit is tested, the circuit is likely to be shorted in which case it is advisable to contact a Chevrolet dealer.

**NOTE:** Always carry a spare fuse in the clip in fuse box cover.

## **TIRES**

**Description.** Chevrolet commercial vehicles are equipped with synthetic rubber tires and tubes. It is important that these tires be properly inflated to assure normal tire life. See "Tire Inflation Table," page 22.

### **Maintenance—**

#### **Mounting Synthetic Tubes.**

1. Before installing tube in tire, clean inside of casing thoroughly.

2. Insert tube in tire and inflate until it is nearly rounded out.

3. Inspect rim for rust scale and bent flanges—clean rust scale and straighten flanges.

4. Using a brush or cloth swab, apply a solution of neutral vegetable oil soap to the inside and outside of tire beads and also to the rim side of tube. Do not allow soap solution to run down into tire.

5. When mounting tire and tube on drop center rim, follow the standard procedure. Be sure tire is centered on rim so that beads are out of rim well before inflating. Do not allow tire to hang loosely on wheel while inflating.

6. Center valve and pull it firmly against the rim. Hold in this position and inflate until beads are firmly seated on rim against flanges.

7. Completely deflate tire by removing valve core.
8. Reinflate tire to recommended pressure.

(Caution: When tube and flap are not properly lubricated and mounted, they will be stretched thin in the tire bead and rim region. This will cause premature failure.)

**½ Ton Tire Changing.** The drop center wheels used on ½ ton models have been so universally used on cars and light trucks for so many years that it can be assumed that all motorists are familiar with the procedure for changing tires; however, the special information pertaining to "synthetic tubes" above should be carefully followed.

### **¾ Ton Tire Changing—Demounting.**

1. Completely deflate tire by removing valve core.
2. Support wheel disc (retaining ring side up) on three or four wood blocks (2" x 4" block 3" or 4" long) to keep tire off the floor.

3. Loosen the tire bead from its seat in the rim by driving the flat end of the tire iron between the bead and the rim. Hold the iron down on the side wall to avoid cutting the bead, and make sure the iron is driven in until it strikes the rim. Apply downward pressure on the tire iron to force the bead away from the retaining ring. Continue around the tire until it is loosened all the way around and the retaining ring can be moved from its support on the gutter diameter and into the gutter well.



Fig. 69—¾ Ton Tire Removal

4. Insert curved end of tire iron in the square notch in the retaining ring and pry out and up while holding the ring down into the gutter at the opposite side (fig. 69). Continue this operation until the cutaway portion of the retaining ring nearest the tire iron spans the outside diameter of the rim gutter.

5. Continue to pry the remainder of this half of the retaining ring from the gutter by moving progressively toward the other cutaway portion in the ring.

6. The remainder of the retaining ring can now be pried out of the gutter and the ring removed.

7. Turn the wheel over and place it on the blocks with the ring side down; then force tire from wheel rim. Remove tire flap and tube from tire.

#### **¾ Ton Tire Changing—Mounting.**

1. Remove all rust scale from the rim and retainer ring.

2. Insert tube in tire and inflate until tube is nearly rounded out.

3. Lubricate tire beads, rim side of tube and both sides of flap with a solution of neutral vegetable oil soap or RuGlyde rubber lubricant. Insert flap in tire.

4. Place the wheel (rim flange down) on three or four small blocks.

5. Place tire on rim with the valve in line with the valve hole in the rim. Insert valve through hole, then work the tire onto the rim until the outer bead clears the rim gutter.

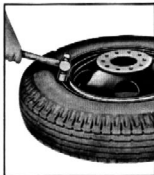
6. Place the retainer ring on the wheel rim and start the side of the ring opposite the square notch into the rim gutter, at "C" (fig. 70) making sure the two cutaway portions of the ring rest on the sides of the wheel at "A". Hold the first portion of the ring in the rim gutter and pry the remaining portion over the wheel rim. To pry the last portion into place, insert the tire iron in the notch "B", thus putting tension on the ring, and tap the ring with a hammer until it drops into place.



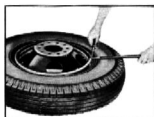
*Fig. 70—¾ Ton Tire Installation*

7. Inflate slowly to not more than 10 pounds pressure. See that the retainer ring is properly seated on its support in the rim gutter (tapping lightly with a hammer will help seat it firmly), and make sure that the tire bead rests evenly against the rim.

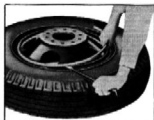
8. Turn the tire and wheel over with the ring down, or lean it against a wall with the ring side in. Completely deflate tire



**Fig. 71—Releasing Tire Clamp Ring**



**Fig. 72—Raising End of Clamp Ring**



**Fig. 73—Removing Tire Clamp Ring**



**Fig. 74—Starting Side Ring Removal**

by removing valve core and then reinflate to recommended pressure.

### **1, 1½ and 2 Ton Equipped with 3 Section Wheel—Removing Tire.**

1. Completely deflate tire by removing the valve core.

2. Using a hammer, tap around the side ring progressively to move it in toward the center of the rim until it clears the clamp ring (fig. 71).

3. Starting at the split in the clamp ring, raise its end out of the rim gutter using a screwdriver and the tire iron (fig. 72). Then remove the clamp ring by prying it out of the gutter with the tire iron, moving progressively around the rim (fig. 73).

4. Drive the curved end of the tire iron in between the side ring and the entire bead (fig. 74). Then pry down on the opposite end of tire iron to move the tire bead away from the side ring flange (fig. 75). Continue the foregoing operation progressively around the tire until the side ring is removed. In some cases it may be necessary to work around the tire a couple of times.

**NOTE:** The tire bead seat on the side ring is slightly tapered; this design makes removal of the ring much easier.

5. Push the valve stem up inside the tire to prevent damage while removing the tire. The tire may be removed from the rim by following the procedure described in Item 4.

### Mounting Tire.

1. Remove all rust scale from the rim, side ring and clamp ring.

2. Insert tube in tire and inflate until tube is nearly rounded out.

3. Lubricate tire beads, rim side of tube and both sides of flap with a solution of neutral vegetable oil soap or RuGlyde rubber lubricant. Insert flap in tire.

4. Place tire on rim with valve in line with the valve hole in rim. Insert valve

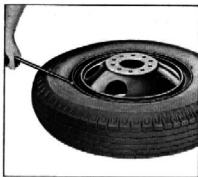


Fig. 75—Removing Side Ring



Fig. 76—Installing Clamp Ring

through hole; then work tire on to rim.

5. Place side ring into position on tire and rim; press side ring into tire and onto rim using the tapered end of tire iron until the clamp ring gutter is exposed. Insert end of clamp ring in gutter and work progressively around the tire until the clamp ring is seated in the gutter (fig. 76).

6. Inflate tire slowly while checking to see that side ring moves out over the clamp ring locking it into gutter. Completely deflate tire and then re-inflate to recommended pressure.

### 1½ Ton Special, 2 Ton and C.O.E.

#### Equipped with 2 Section Rims.

To facilitate assembly and removal, two cutaway sections "A" (fig. 77) and an operating notch "B" are incorporated in the locking flange of the side ring.

In separating the side ring from the wheel rim of the spare or new wheel for tire installation, stand the wheel up with the operating notch in the side ring at the top. The

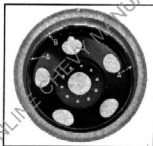


Fig. 77

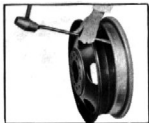


Fig. 78

straight end of a tire iron is inserted and driven into the operating notch (fig. 78). The tool is moved as a lever to lift the side ring away from the rim. After the side ring has passed over the rim gutter at the operating notch, work progressively around entire rim until side ring is separated from wheel rim.

### Removing the Tire

1. Completely deflate tire by removing the valve core.
2. Loosen the tire bead from its seat in the side ring by driving the bead loosening end of a tire iron between the tire bead and the side ring (fig. 79). Repeat this operation progressively around the side ring prying until bead is loose.

3. Insert straight end of tire iron into operating notch located at double pimples "B" (fig. 80).

4. Push side ring down at point opposite operating notch and force tire iron handle down causing side ring to disengage from rim gutter. Repeat progressively around side ring prying ring from rim gutter until free.

5. To free opposite tire bead from wheel rim, turn tire over and repeat bead loosening operation (fig. 81).

**NOTE:** It is not necessary to remove side ring from tire bead if tire is to be removed for tube repair only. Simply loosen tire bead from wheel rim as in figure 81. Then turn assembly over and remove ring with tire attached as in figure 80.

### Mounting the Tire

1. Remove all rust scale from wheel rim and side ring.

2. Insert tube in tire and inflate until tube is nearly rounded out.

3. Lubricate tire beads, rim sides of tube and both sides of flap with a solution of neutral vegetable soap or Ru-Glyde or similar rubber lubri-



Fig. 79



Fig. 80



Fig. 81



cant. Insert flap in tire.

4. Place disc portion of wheel on floor with rim gutter up and install tire and tube assembly indexing tube valve stem with stem support in wheel rim and with valve stem pointing in desired direction.

5. Place side ring in position with operating notch "B" (fig. 82) approximately three inches from valve on either side.

6. The two cutaway sections opposite each other "A" (fig. 83) on inner diameter of side ring are positioned so as to span the rim gutter.

7. At point "C" (fig. 83), opposite valve, force ring into rim gutter as far as possible.

8. Insert straight end of tire iron into operating notch "B" (fig. 84). Then pull in direction indicated.

9. Retain pressure with tool and strike side ring downward at a point between operating notch and cutaway section, thereby engaging side ring over rim gutter at these points.

10. Remove tool and strike blows progressively toward other cutaway section until entire toe of side ring has passed over rim gutter.

11. While side ring is being applied to wheel rim, it is tight and requires force or hammer blows to complete application. When side ring is completely installed on rim, it is no longer tight and can be depressed or will yield to a light hammer blow. Precaution should be taken to see that side ring is not binding on rim and can be freely depressed (fig. 85) before inflating tire.



Fig. 85

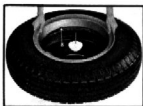


Fig. 82



Fig. 83



Fig. 84

12. With 2 section rims, after rim and tire are installed, inflate to approximately 75 lbs. or until the two parts center and lock. A snap can usually be heard as ring centers and moves outward onto bead seat. Deflate and reinflate to recommended pressure.

## CHAPTER III

### LUBRICATION

Your Chevrolet dealer is equipped to render complete lubrication service. We recommend that you take advantage of his modern equipment and trained men.

Lubricants are much cheaper than repair bills, and should be applied regularly if you are to secure a maximum of useful service from your truck. It is consequently, important that the proper grade of lubricants be used in accordance with a definite schedule.

In your selection of the proper brand of oil, it is desirable to consider the reputation of the refiner or marketer. He is responsible for the quality of his product and his reputation is the truck owner's best indication of quality.

### ENGINE

Your use of the proper engine oil is one of great importance in obtaining maximum performance and satisfaction from your truck.

It is imperative that the recommended light oils be used in the engine during the "breaking-in" period.

Light oils assure a better "breaking-in" of the engine, as they assure ease of starting; prompt flow of a sufficient quantity of oil to the bearings; less friction between moving parts; less wear of moving parts, etc.

**Types of Oils.** Crankcase oils in service, unless protected against oxidation, may form sludge and varnish and under some conditions corrosive acids.

To minimize the formation of these harmful decomposition products and to supply the type of oil best suited for the different operating conditions, the oil industry markets several types of crankcase oils. These types have been defined by the American Petroleum Institute as follows:

**"SERVICE ML"** (Comparable to former Regular Type) — This term designates motor oil generally suitable for use in internal combustion engines operating under light and favorable service conditions.

**"SERVICE MM"** (Comparable to former Premium Type) — This term designates motor oil having the characteristics necessary to make it generally suitable for use in internal combustion engines operating under moderate to severe service conditions which present problems of sludge, varnish or bearing corrosion control when crankcase oil temperatures are high.

**"SERVICE MS" and "SERVICE DG"** (Comparable to former Heavy Duty Types)—These terms designate motor oils having the characteristics to make them generally suitable for use in internal combustion engines operating under unfavorable or severe types of service conditions.

**"SERVICE DS"** covers oils specially compounded for use in Diesel Engines under severe service conditions. These oils are not readily obtainable by automobile owners and are not generally required for the engine of your car. However, such oils may be used to advantage in your Chevrolet Engine under severe stop-and-go service during the winter months.

For maximum protection of your Chevrolet Engine under all driving conditions, it is recommended that oils designated "For Service MS" or "For Service DG" be used. If these oils are not available, oils designated "For Service MM" may be used. We do not recommend oils designated "For Service ML." **S.A.E. Viscosity Numbers.** The viscosity of a lubricant is simply a measure of its body or fluidity.

The S.A.E. viscosity numbers constitute a classification of lubricants in terms of viscosity or fluidity, but with no reference to any other characteristics or properties.

The S.A.E. viscosity numbers have been adopted by practically all oil companies, and no difficulty should be experienced in obtaining the proper viscosity grade in the different types of motor oils to meet seasonal requirements.

**Lubrication—First 500 Miles.** The crankcase of the engine, as delivered, is filled with a light body breaking-in oil.

Use this oil during the first 500 miles.

**NOTE:** At the end of the first 500 miles, drain the crankcase—when hot—and refill to the proper level with the recommended oil.

**Lubrication—After 500 Miles.** After the first 500 miles, the crankcase oil should be selected to give the best performance under individual climatic and driving conditions.

**Fall—Winter—Spring.** During the colder months of the year, an oil which will permit easy starting at the lowest atmospheric temperature likely to be encountered should be used.

When the crankcase is drained and refilled, the crankcase oil should be selected not on the basis of the existing temperature at the time of the change, but on the lowest temperature anticipated for the period during which the oil is to be used.

Unless the crankcase oil is selected on the basis of viscosity or fluidity at the anticipated temperature, difficulty in starting will be experienced at each sudden drop in temperature.

The viscosity grade of crankcase oil will, therefore, depend

upon the climatic conditions under which a truck is operated. The grades best suited for use in the engine at the various temperatures are shown in the following table:

If you anticipate that the lowest atmospheric temperature will be:	Use the grade indicated:
Not lower than 32°F. above zero	S.A.E. 20-W or S.A.E. 20
Not lower than 10°F. above zero	S.A.E. 20-W
Not lower than 10°F. below zero	S.A.E. 10-W
Below 10°F. below zero	S.A.E. 5-W (see note)

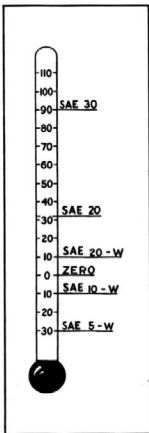


Fig. 86—Oil Thermometer

**NOTE:** S.A.E. 5-W oils are particularly advantageous during low temperatures because of their easy starting and quick flow characteristics. The easy starting characteristics of these oils greatly reduce the drain on the battery in cold weather.

The S.A.E. 5-W oils designated "For Service MS" are similar in viscosity, or "Body," at engine operating temperatures to high quality S.A.E. 10-W oils and give equivalent lubrication protection and oil economy. These oils are intended for use under all operating conditions and under all atmospheric temperatures that may be encountered when below zero temperatures may be expected—they may be retained in the crankcase during the warmer days that occur during the winter season.

Figure 86 shows the data in the above table as it would appear on a thermometer—the lowest temperature at which the indicated grades of oil will permit easy starting.

**NOTE:** When in doubt use the lighter grade of oil.

We recommend the use of S.A.E. 20-W rather than S.A.E. 20 if you anticipate temperatures to drop to freezing.

**Summer.** The use of S.A.E. 20-W or S.A.E. 20 oils during the summer months will permit better all around



Fig. 87—Oil Gauge Rod in Pan

performance than will the heavier body oils, with no appreciable increase in oil consumption.

### **Maintaining Crankcase Oil Level.**

The Oil Gauge Rod (fig. 87) is marked "Full" and "Add Oil." These notations have broad arrows pointing to the level lines.

The oil level should be maintained between the two lines; neither going above the "Full" line nor under the "Add Oil" line.

Check the oil level frequently and add oil when necessary.

**Oil Pressure.** If the oil pressure registers abnormally high after the engine is thoroughly warmed up, an inspection should be made to ascertain if the oil lines and passages are "plugged" up.

**When to Change Crankcase Oil.** To insure continuation of best performance, low maintenance cost and long engine life, it is necessary to change the crankcase oil whenever it becomes contaminated with harmful foreign materials. Under normal driving conditions, draining the crankcase and replacing with fresh oil every 2000-3000 miles is recommended.

Under the driving conditions described in the following paragraphs, it may become necessary to drain the crankcase oil more frequently.

Frequent long runs at high speed, or continuous driving with heavy loads, with the resultant high engine operating temperatures, may oxidize the oil and may result in the formation of sludge and varnish. While no definite drain periods can be recommended under these conditions, they should be more frequent than under normal driving conditions.

Driving over dusty roads or through dust storms introduces abrasive material into the engine. Carburetor air cleaners decrease the amount of dust that may enter the crankcase. The frequency of draining depends upon severity of dust conditions and no definite draining periods can be recommended, but should be more frequent than under normal driving conditions.

Short runs in cold weather, such as city driving, and ex-

cessive idling, do not permit thorough warming up of the engine and water may accumulate in the crankcase from condensation of moisture produced by the burning of the fuel. Water, in the crankcase, may freeze and interfere with proper oil circulation. It also promotes rusting and may cause clogging of oil screens and passages. Under normal driving conditions this water is removed by the crankcase ventilator. But if water accumulates it should be removed by draining the crankcase as frequently as may be required.

It is always advisable to let the engine reach normal operating temperature before draining the crankcase. The benefit of draining is, to a large extent, lost if the crankcase is drained when the engine is cold as some of the suspended foreign material will cling to the sides of the oil pan and will not drain out readily with the slower moving oil. Flushing the crankcase with oils or solutions other than a good grade of SAE 10W engine oil is not recommended.

### **Crankcase Dilution**

Probably the most serious phase of engine oil deterioration is that of crankcase dilution, which is the thinning of the oil by fuel vapors leaking by the pistons and rings and mixing with the oil.

Leakage of fuel, or fuel vapors, into the oil pan mostly occurs during the "warming-up" period, when the fuel is not thoroughly vaporized and burned.

**Automatic Control Devices to Minimize Crankcase Dilution.** The Chevrolet engine is equipped with automatic devices which aid greatly in minimizing the danger of crankcase dilution.

Rapid warming up of the engine is aided by the thermostatic water temperature control, which automatically prevents circulation of the water in the cooling system until it reaches a predetermined temperature.

Thermostatic heat control on the exhaust manifold, during the warming-up period, automatically directs the hot exhaust gases against the center of the intake manifold, greatly aiding the proper vaporization of the fuel.

Sparing use of the choke reduces danger of raw, or unvaporized fuel entering the combustion chamber and leaking into the oil reservoir.

An efficient crankcase ventilating system drives off fuel vapors and aids in the evaporation of the raw fuel and water which may find its way into the oil reservoir.

**Control by Truck Owner Under Abnormal Conditions.** Ordinarily the above automatic control devices will minimize, or eliminate, the danger of crankcase dilution.

However, there are abnormal conditions of service when the truck owner must aid in the control of crankcase dilution.

Short runs in cold weather, such as city driving and excessive idling, do not permit the thorough warming up of the engine nor the efficient operation of automatic control devices. It is recommended that the oil be changed more often when the truck is subjected to this type of operation.

Poor mechanical condition of the engine, such as scored cylinders, poor ring fit, "sloppy" or loose pistons, faulty valves, and poor ignition will increase crankcase dilution. Keep your truck in good mechanical condition.

Poor fuels which contain portions hard to ignite and slow to burn will increase crankcase dilution. Use good fuel.

**Water in Crankcase.** Serious lubrication troubles may result in cold weather due to an accumulation of water in the oil pan.

A slight amount of exhaust gases pass the pistons and rings, even under the most favorable conditions, and cause the formation of water in the oil pan, in a greater or lesser degree, until the engine becomes warm. When the engine becomes thoroughly warm, the crankcase will no longer act as a condenser and all of these gases will pass out through the crankcase ventilator system.

Short runs in cold weather, such as city driving, will aggravate this condition.

**Corrosion.** Practically all present day engine fuel contains a small amount of sulphur which, in the state in which it is found, is harmless; but this sulphur on burning, forms certain gases, a small portion of which is likely to leak past the pistons and rings and reacting with water, when present in the crankcase, form corrosive acids.

As long as the gases and the internal walls of the crankcase are hot enough to keep water vapor from condensing, no harm will result; but when an engine is run in low temperatures, moisture will collect and unite with the gases formed by combustion; thus, acid will be formed and is likely to cause

serious etching or pitting. This etching, pitting or corrosion, when using fuel containing considerable sulphur, manifests itself in excessively rapid wear on piston pins, camshaft bearings and other moving parts of the engine, and can be traced back to the character of fuel used, or a condition of the engine, such as excessive blow-by or improper carburetor adjustment.

### **Oil Filter**

If an oil filter is installed on your truck it is recommended that, under normal conditions, the filter cartridge be replaced and the oil changed at 3,000 mile intervals. Severe dust conditions may warrant replacing the cartridge at correspondingly lower mileages.

### **Water Pump**

The permanently sealed ball bearing water pump does not require lubrication by the truck owner.

### **Starting Motor**

Starting Motor end frames are equipped with oil-less bearings which do not require lubricant.

### **Generator**

Every 1,000 miles, fill oil cup at each end to the top with a light oil or engine oil.

### **Distributor**

Lubricant cup located on side of housing is filled with chassis lubricant. Turn cup down one turn every 1,000 miles. Distributor cap should be removed every 5,000 miles, then remove rotor and apply a small amount of petroleum jelly on distributor cam surface by holding a clean cloth which has been soaked in jelly against it while cranking starter.

## **REAR AXLE AND CONVENTIONAL TRANSMISSION**

**Recommended Lubricants.** Rear Axles—S.A.E. 90 "Multi-Purpose" Gear Lubricant  
2-Speed Rear Axles—S.A.E. 90 "Multi-Purpose" Gear Lubricant  
Conventional Transmissions—S.A.E. 90 Straight Mineral Oil Gear Lubricant  
S.A.E. 90 "Multi-Purpose" Gear Lubricant

**Caution:** Straight Mineral Oil Gear Lubricants must not be used in Hypoid Rear Axles or 2-Speed Rear Axles.



The S.A.E. 90 viscosity grade is recommended for "year-around" service. However, when extremely low temperatures are encountered for protracted periods during the winter months, the S.A.E. 80 viscosity grade may be used.

**"Multi-Purpose" Gear Lubricants.** Gear lubricants that will give satisfactory lubrication for all types of operation have been developed. These lubricants are known as "Multi-Purpose" Gear Lubricants.

"Multi-Purpose" Gear Lubricants may be used in conventional truck transmissions, steering gears, and in universal joints requiring a fluid lubricant.

"Multi-Purpose" Gear Lubricants must be carefully compounded and of the latest non-corrosive type and of proven quality. The lubricant manufacturer must be responsible for the satisfactory performance of his product. His reputation is your best indication of quality.

**Lubricant Additions.** The lubricant level in the housing should be checked periodically and with unit at operating temperature, lubricant should be level with bottom of filler plug hole.

It is recommended that any additions required to bring up the lubricant level be made, using the same type of lubricant as in the housing.

**Lubricant Changes.** Seasonal changes of the lubricant are not required, however it may be necessary and advisable to drain the transmission and rear axle in trucks subject to severe service. Flushing may then be accomplished with a light flushing oil. Do not use water, steam, kerosene, gasoline, alcohol, etc.

## AUTOMATIC TRANSMISSION

Every 1,000 miles the fluid level should be checked and fluid added as described below when necessary. Use only "Automatic Transmission Fluid Type A" bearing an AQ-ATF number. This fluid is available in sealed containers at all Authorized Chevrolet Dealers and oil company service stations. A good grade of 10W engine oil may be used temporarily in emergencies but should be replaced with Automatic Transmission Fluid as soon as possible.

Every 25,000 miles the transmission fluid should be drained and refilled as described herein.

**CHECKING HYDRA-MATIC FLUID.** Check transmission fluid level with transmission at normal operating temperature. Otherwise, the engine and transmission must be warmed to operating temperature. Engine must be running while checking or adding fluid.

1. Set parking brake and move control lever into (N) position; then start engine. Run engine at idling speed until engine and transmission have reached normal operating temperature.

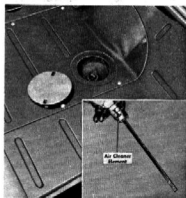


Fig. 88—Checking Transmission Fluid Level

2. Lift access hole cover plate on floor pan (fig. 88) to give access to oil breather and level indicator assembly.

3. Remove all dirt or gravel from area around indicator and transmission case. With engine still idling, remove indicator from case. Wipe clean, re-insert, and carefully withdraw again.

Exercise extreme care to prevent dirt from entering filler tube when checking fluid level. Add fluid (Step 4) only when level reaches the "L" mark (1 Qt. low) on the indicator.

4. With engine operating at normal idle, add sufficient Automatic transmission fluid to bring level to "F" (full) mark on indicator.

**CAUTION:** Fluid level should never be higher than "F" mark on indicator, when fluid is at operating temperature. An excessive amount of fluid will cause spinning drums to aerate fluid. Expanding fluid may then be forced out of case around indicator. Sufficient fluid may be lost to damage the transmission seriously.

5. Reinstall indicator and cover access hole with plate.

**DRAINING AND REFILLING THE HYDRA-MATIC TRANSMISSION.** At the 25,000 mile interval the transmission should be drained and refilled. Approximately 8½ quarts\* of Hydra-Matic Fluid are required to refill transmission after torus cover and oil pan have been drained. Drain oil imme-

diately after operation, while fluid is still warm. Do not flush transmission after draining.

1. Turn flywheel until torus cover plug is at lowest point.



**Fig. 89—Drain Plugs on Transmission Without Cooler**

Remove torus cover drain plug (fig. 89) and thoroughly drain torus cover.

2. Remove oil pan drain plug (fig. 89) and thoroughly drain oil pan.

3. When drainage is completed install oil pan drain plug. Tighten drain plug to 35-45 foot-pounds torque.

4. Coat torus cover plug with sealer (Permatex No. 3) and install in torus cover. Tighten plug to 6-7 foot-pounds torque.

5. Remove oil breather and indicator assembly (see "Checking Hydra-Matic Fluid") and wipe it clean. Clean indicator cap air cleaner (fig. 88) in cleaning solvent.

6. Pour six\* quarts of Automatic transmission fluid into transmission. Be sure container and spout or funnel is clean.

7. Set parking brake and position control lever in "N" position and start engine. Run engine at idling speed for 3 to 5 minutes, to fill coupling.

8. With engine idling, then add sufficient fluid (approximately 2½ quarts) to bring oil level to "L" (low) mark on indicator. Continue to run engine until normal temperature is attained; then recheck fluid level to "F" (full) mark on indicator.

\* Add one additional quart if equipped with transmission oil cooler.

## UNIVERSAL JOINT

**½ Ton (116" Wheelbase) Models.** The universal joint is the bushed trunnion type and receives its lubrication from the transmission. Additional lubrication at this point is unnecessary. The bearing retaining screw hole in the top of the housing is used to fill the universal joint at the time of assembly.

**NOTE:** The pipe plug in the top of the front universal joint housing on the 4-speed transmission (optional equipment) is for manufacturing purposes and is used to fill the front universal joint at the time of assembly.

**$\frac{3}{4}$  Ton 125 $\frac{1}{4}$ ", 1 Ton Truck 137", 1 $\frac{1}{2}$  Ton Conventional Trucks 137" and 161", 1 $\frac{1}{2}$  to 2 Ton Heavy Duty Trucks 137" and 161", Cab-Over-Engine Trucks 134" and 158" Wheel Base.** The front, intermediate and rear universal joints are the needle bearing type equipped with lubrication fittings and should be lubricated with the same type of lubricant used in the transmission.

**CAUTION:** Under no consideration should any of the soap type of lubricants—such as chassis lubricants, fibrous universal joint lubricants, etc.—be used.

The propeller shaft slip joint, located to the front of the intermediate universal joint, is also equipped with a lubrication fitting and should be lubricated with chassis lubricant.

**110" Wheelbase Cab-Over-Engine Trucks.** The front and rear universal joints are the needle bearing type equipped with lubrication fittings and should be lubricated with the same type of lubricant used in the transmission.

**CAUTION:** Under no consideration should any of the soap type of lubricants—such as chassis lubricants, fibrous universal joint lubricants, etc.—be used.

The propeller shaft slip joint, located to the front of the front universal joint, is also equipped with a lubrication fitting and should be lubricated with chassis lubricant.

**179" Wheelbase 1 $\frac{1}{2}$  and 2 Ton Heavy Duty and 199" and 212" Wheelbase School Buses.** The front, front intermediate, rear intermediate and rear universal joints are the needle bearing type equipped with lubrication fittings,, and should be lubricated with the same type of lubricant used in the transmission.

**CAUTION:** Under no consideration should any of the soap type of lubricants—such as chassis lubricants, fibrous universal joint lubricants, etc.—be used.

The propeller shaft slip joint, located to the front of the rear intermediate universal joint, is also equipped with a lubrication fitting and should be lubricated with chassis lubricant.

## **FRONT WHEEL BEARINGS**

**$\frac{1}{2}$ ,  $\frac{3}{4}$ , 1 and 1 $\frac{1}{2}$  Ton.** Front wheels are equipped with ball bearings.

**C.O.E. and 2 Ton.** Front wheels are equipped with tapered roller bearings.

Lubrication of both types should be with a smooth high melting point front wheel bearing lubricant.

**CAUTION:** "Long fibre" or "Viscous" type of lubricants should not be used.

Due to the weight of the tire and wheel assembly it is recommended that they be removed from hub before lubricating bearings to prevent damage to oil seal. Then remove the front wheel hub to lubricate the bearings. The bearings should be thoroughly cleaned before repacking with lubricant. Do not pack the hub between the inner and outer bearing assemblies, or the hub cap, as this excessive lubrication results in the lubricant working out into the brake drum and linings.

In mounting the front hubs, great care must be taken not to damage seals and to properly adjust bearings, (see page 46).

## **REAR WHEEL BEARINGS**

The rear wheel bearings receive their lubrication from the rear axle. When installing bearings which have been cleaned, repack with a smooth type grease.

## **CHASSIS**

For chassis lubrication, consult the lubrication chart, which shows the points to be lubricated and how often the lubricant should be applied.

The term "Chassis Lubricant" as used in this manual, describes a semi-fluid lubricant designed for application by commercial pressure gun equipment. It is composed of mineral oil (usually 300 to 500 second Saybolt Universal viscosity at 100° F.) combined with approximately 8% soap, or soaps, which are insoluble in water.

## **Spring Shackles and Spring Bolts**

The spring shackles and spring bolts are equipped with pressure gun lubrication fittings, and should be lubricated with lubricant recommended under "Chassis Lubrication."

## **Brake and Clutch Pedals**

The brake and clutch pedals on the Cab-Over-Engine truck models are equipped with pressure gun lubrication fittings. On Forward Control the clutch and brake pedals are both lubricated from a pressure gun lubrication fitting in the end of the shaft. On the other truck models, only the brake pedal is equipped with a pressure gun lubrication fitting; the lubri-

cant so applied lubricates both the brake pedal and the clutch pedal. Use chassis lubricant at these points.

### **Brake and Clutch Idler Lever ( $\frac{3}{4}$ and 1 ton Forward Control)**

The brake idler lever on the above models is equipped with a pressure gun lubrication fitting. Lubricate with chassis lubricant every 1,000 miles.

### **Hydrovac**

The Hydrovac unit is equipped with a lubrication plug in the closed end of the shell approximately  $\frac{1}{2}$ " from the bottom of the cylinder. One ounce of Bendix Vacuum Cylinder Oil or Delco shock absorber fluid should be added at 10,000 mile intervals or each six month period, especially prior to the start of cold weather.

### **Steering Gear Lubrication**

The steering gear is filled at the factory with an all-season gear lubricant. Seasonal change of this lubricant is unnecessary and the housing should not be drained. Whenever required, additions should be made using steering gear lubricants marketed by many oil companies, "Multi-Purpose" gear lubricants as recommended for rear axle and transmission may be used.

### **Steering Column Manual Shift Mechanism**

#### **$\frac{1}{2}$ , $\frac{3}{4}$ , and 1 Ton Models with Heavy Duty 3-Speed Transmission**

This mechanism, lubricated at the factory, is well protected and should not require further lubrication.

However, should the shifting effort become noticeably greater, remove the cap on the gearshift control box and fill box with a soft smooth grease.

### **General Note**

Cab-Over-Engine trucks are provided with removable floor pans and Forward Control units have a removable engine compartment lid for easy access to the engine compartment.

To lubricate the C.O.E. generator front and rear bearings, standpipes are provided which are readily accessible after raising the hood.

## **½ TON TRUCK LUBRICATION**

1. Front Spring Shackle (2 each side) .....1000 mile
2. Generator (2 oil cups) (see page 75) .....1000 mile
3. King Pin (2 each side) .....1000 mile
4. Front Wheel Bearing (see page 79) .....10,000 mile
5. Tie Rod (1 each side) .....1000 mile
6. Steering Connecting Rod (1 each end) .....1000 mile
7. Front Spring Bolt (1 each side) .....1000 mile
8. Distributor (1 cup) (see page 75) .....1000 mile
9. Steering Gear (see page 81) .....1000 mile
10. Air Cleaner (see page 26) .....2000 mile
11. Throttle Bell Crank.....1000 mile
12. Transmission (see pages 75-78) .....
13. Rear Spring Bolt (1 each side) .....1000 mile
14. Brake Pedal (see page 80) .....1000 mile
15. Rear Axle (see page 75) .....
16. Rear Spring Shackle (2 each side) .....1000 mile

### **Lubricant Key for Figure 90**

**CL Chassis Lubricant**

**EO Light Engine Oil**

**WB Wheel Bearing Lubricant**

**SG Steering Gear Lubricant**

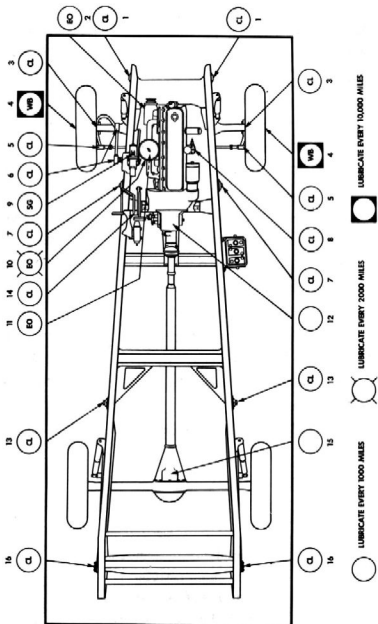


Fig. 90—1/2 Ton Lubrication Chart



## **¾ TON TRUCK LUBRICATION**

1. Front Spring Shackle (2 each side) .....1000 mile
2. Generator (2 oil cups) (see page 75) .....1000 mile
3. King Pin (2 each side) .....1000 mile
4. Front Wheel Bearings (see page 79) .....10,000 mile
5. Tie Rod (1 each side) .....1000 mile
6. Steering Connecting Rod (1 each end) .....1000 mile
7. Steering Gear (see page 81) .....1000 mile
8. Distributor (1 cup) (see page 75) .....1000 mile
9. Front Spring Bolt (1 each side) .....1000 mile
10. Air Cleaner (see page 26) .....2000 mile
11. Brake Pedal (see page 80) .....1000 mile
12. Throttle Bell Crank .....1000 mile
13. Transmission (see pages 75-78) .....
14. Universal Joint (1 each—see page 78) .....1000 mile
15. Propeller Shaft Slip Joint .....1000 mile
16. Rear Spring Bolt (1 each side) .....1000 mile
17. Rear Axle (see page 75) .....
18. Rear Spring Shackle (2 each side) .....1000 mile

### **Lubricant Key for Figure 91**

**CL Chassis Lubricant**

**EO Light Engine Oil**

**WB Wheel Bearing Lubricant**

**SG Steering Gear Lubricant**

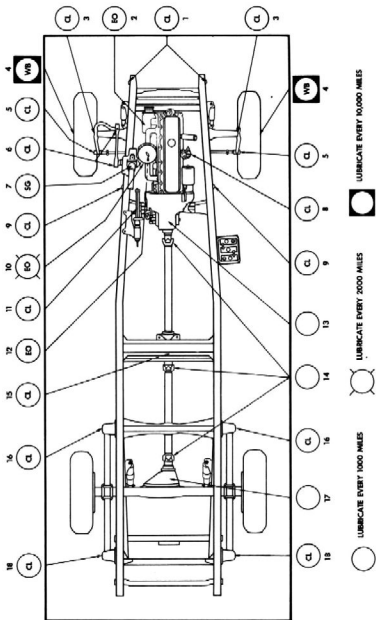


Fig. 91 — 1/4 Ton Lubrication Chart

## 1 TON TRUCK LUBRICATION

1. Front Spring Shackle (2 each side) .....	1000 mile
2. Generator (2 oil cups) (see page 75) .....	1000 mile
3. King Pin (2 each side) .....	1000 mile
4. Front Wheel Bearings (see page 79) .....	10,000 mile
5. Tie Rod (1 each side) .....	1000 mile
6. Steering Connecting Rod (1 each end) .....	1000 mile
7. Front Spring Bolt (1 each side) .....	1000 mile
8. Distributor (1 cup) (see page 75) .....	1000 mile
9. Steering Gear (see page 81) .....	1000 mile
10. Air Cleaner (see page 26) .....	2000 mile
11. Universal Joint (1 each) (see page 78) .....	1000 mile
12. Throttle Bell Crank .....	1000 mile
13. Transmission (see page 75-78) .....	
14. Rear Spring Bolt (1 each side) .....	1000 mile
15. Rear Axle (see page 75) .....	
16. Rear Spring Shackle (2 each side) .....	1000 mile
17. Brake Pedal (see page 80) .....	1000 mile
18. Propeller Shaft Slip Joint .....	1000 mile

### Lubricant Key for Figure 92

**CL Chassis Lubricant**

**EO Engine Oil**

**WB—Wheel Bearing Lubricant**

**SG—Steering Gear Lubricant**

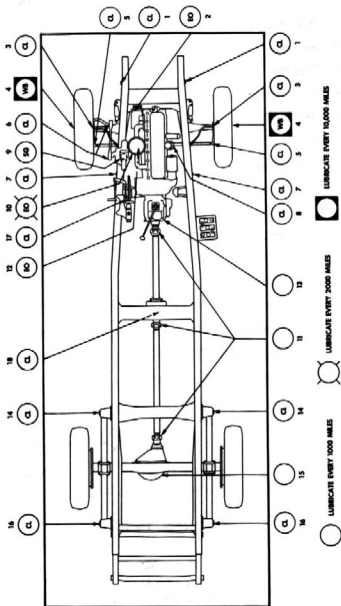


Fig. 92—1 Ton Lubrication Chart

## 1½ AND 2 TON TRUCK LUBRICATION

1. Front Spring Shackle (2 each side) .....	1000 mile
2. Generator (2 oil cups) (see page 75) .....	1000 mile
3. King Pin (2 each side) .....	1000 mile
4. Front Wheel Bearings (see page 79) .....	10,000 mile
5. Tie Rod (1 each side) .....	1000 mile
6. Steering Connecting Rod (1 each end) .....	1000 mile
7. Front Spring Bolt (1 each side) .....	1000 mile
8. Distributor (1 cup) (see page 75) .....	1000 mile
9. Steering Gear (see page 81) .....	1000 mile
10. Air Cleaner (see page 26) .....	2000 mile
11. Universal Joint (1 each) (see page 78) .....	1000 mile
12. Throttle Bell Crank .....	1000 mile
13. Transmission (see page 75) .....	
14. Rear Spring Bolt (1 each side) .....	1000 mile
15. Rear Axle (see page 75) .....	
16. Rear Spring Shackle (2 each side) .....	1000 mile
17. Brake Pedal (see page 80) .....	1000 mile
18. Propeller Shaft Slip Joint .....	1000 mile
19. Hydrovac (see page 81) .....	10,000 mile
20. Parking Brake Operating Lever .....	1000 mile

### Lubricant Key for Figure 93

**CL** Chassis Lubricant

**EO** Engine Oil

**WB**—Wheel Bearing Lubricant

**SG**—Steering Gear Lubricant

**BL**—Bendix Vacuum Cylinder Oil

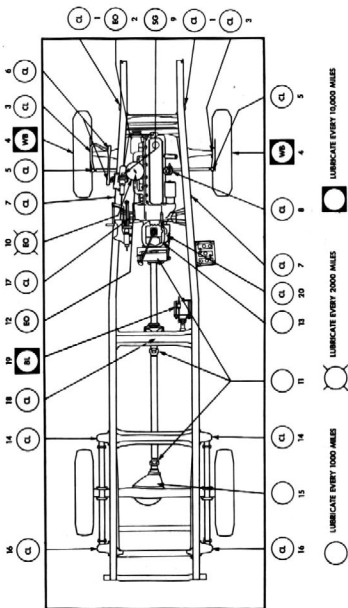


Fig. 93—1½ and 2 Ton Lubrication Chart

## CHAPTER IV

### TECHNICAL DATA

**Vehicle Serial Number**—Stamped on plate located on left body hinge pillar on all models except flat face cowl which has plate located on left hand cowl inner panel.

**Engine Number**—Stamped on boss on right side of cylinder block to the rear of ignition distributor.

### UNIT CAPACITY CHART

Engine Oil .....	5 qt.
Transmission	
3-Speed .....	1½ pt.
3-Speed Heavy Duty .....	2¾ pt.
4-Speed .....	6 pt.
Automatic (Total)* .....	9 qt.
(Refill)* .....	8½ qt.

\* Add 1 qt. if equipped with transmission oil cooler.

#### Rear Axle

½-Ton .....	4½ pt.
¾- and 1-Ton .....	6 pt.
1½-Ton .....	11 pt.
2-Ton Regular .....	12 pt.
2-Speed .....	14½ pt.

#### Gasoline Tank

Cab Mounted Tank .....	17½ gal.
All ½- and ¾-Ton and 1-Ton Forward Control....	16 gal.
All others except School Buses.....	18 gal.
All School Bus Chassis .....	30 gal.

#### Cooling System

½ ton, ¾ ton, and 1-ton Forward Control .....	16 qt.
1-ton except Forward Control, 1½ ton .....	17 qt.
2-ton (1½-ton special) with Loadmaster 235	
Engine .....	18 qt.
2-ton (1½-ton special) with Jobmaster 261 Engine.	17 qt.
¾-ton except Forward Control with Heavy Duty	
Radiator .....	17 qt.
1-ton, except Forward Control, and 1½-ton with	
Heavy Duty Radiator .....	18 qt.

## LAMP BULB CHART

Location	C.P.	Bulb No.
Headlamp .....	45-35 watts	Sealed Beam
Parking Lamp .....	3	63
Tail and Stop Lamp		
Canopy Express and Carryall		
with Endgate--Tail .....	3	63
--Stop .....	21	1129
All Others (1 bulb) .....	21-3	1154
Instrument Cluster .....	2	55
Ignition Lock .....	1	51
Dome Lamp .....	15	87
Headlamp Beam Indicator .....	1	51

## SPECIFICATIONS

### Wheelbase

½-Ton .....	116"
¾-Ton .....	125¼"
1-Ton .....	137"
1½-Ton (short) .....	137"
1½-Ton (long) .....	161"
2-Ton Conventional (short) .....	137"
2-Ton Conventional (long) .....	161"
2-Ton Conventional (extra long) .....	179"
2-Ton C.O.E. (short) .....	110"
2-Ton C.O.E. (reg.) .....	134"
2-Ton C.O.E. (long) .....	158"
1½-Ton School Bus Chassis .....	161"
2-Ton School Bus Chassis (Short) .....	199"
2-Ton School Bus Chassis (Long) .....	212"

### Engine

	Thriftmaster 235 and Loadmaster 235	Jobmaster 261
Number of Cylinders .....	6	6
Bore .....	3 $\frac{9}{16}$ "	3 $\frac{3}{4}$ "
Stroke .....	3 $\frac{15}{16}$ "	3 $\frac{15}{16}$ "
Piston Displacement .....	235.5 cu. in.	261 cu. in.
Firing Order .....	1-5-3-6-2-4	1-5-3-6-2-4
Compression Ratio .....	7.5 to 1	7.17 to 1



## Engine

	Thrftmaster 235	Loadmaster 235	Jobmaster 261
Horsepower (AMA).....	30.4	30.4	33.7
Horsepower (Rated).....	112	112 (Conventional) 107 (C.O.E. and Forward Control)	135 (Conventional) 125 (C.O.E. and Forward Control)
Number of Main Bearings.	4	4	4

## Transmission Ratios

	Heavy Duty			Automatic	
	3-speed	3-speed	4-speed	Automatic ½ Ton	¾ and 1 Ton
First (low) ....	2.94 to 1	3.17 to 1	7.06 to 1	3.82 to 1	4.72 to 1
Second .....	1.68 to 1	1.75 to 1	3.58 to 1	2.63 to 1	3.03 to 1
Third .....	Direct	Direct	1.71 to 1	1.45 to 1	1.55 to 1
Fourth .....			Direct	Direct	Direct
Reverse .....	2.94 to 1	3.76 to 1	6.78 to 1	4.30 to 1	6.11 to 1

## Rear Axle Ratios

	Type	Ratio
½-Ton .....	Semi-floating Hypoid	3.9 to 1
¾-Ton .....	Full-floating Hypoid	4.57 to 1
¾-Ton (R.P.O.) ..	Full-floating Hypoid	5.14 to 1
¾-Ton Forward Control .....	Full-floating Hypoid	5.14 to 1
1-Ton .....	Full-floating Hypoid	5.14 to 1
1½-Ton (R.P.O.) ..	Full-floating Hypoid	5.43 to 1
1½-Ton (regular) ..	Full-floating Hypoid	6.17 to 1
2-Ton .....	Full-floating Hypoid	6.17 to 1
2-Speed Axle .....	Full-floating Hypoid	6.13 to 1 high 8.10 to 1 low
2-Speed Axle .....	Full-floating Hypoid	6.70 to 1 high 8.86 to 1 low

## ADJUSTMENT SPECIFICATIONS

Spark plug gap .....	.035" ..
Breaker point gap—All Engines .....	{ .019" new lever .016" used lever
Distributor points to break when steel ball in flywheel is in line with pointer on flywheel housing.	

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# 1954 LOAD CAPACITY CHART

MODEL			NOMINAL RATING	GROSS VEHICLE WEIGHT	MINIMUM TIRES AND EQUIPMENT			EQUIPMENT
TYPE	SERIES	WHEEL-BASE			TIRE SIZE AND PLY RATING			
					FRONT	REAR		
SEDAN DELIVERY	1508	D54	115	§ 4000	6.70-15-4	6.70-15-4		
				4100	6.70-15-6	6.70-15-6		
LIGHT DUTY	3100	H54	116	§ 4200	6.00-16-6	6.00-16-6		
				* 4800	6.00-16-6	6.50-16-6		
MEDIUM DUTY	3600	J54	125¼	§ 5400	15-6	15-6		
				5800	15-6	15-8	2-stage, 8-leaf rear spring	
					7.00-17-6	7.00-17-8		
				* 6500	6.50-16-6	6.50-16-6 Dual	2-stage, 8-leaf rear spring	
	3742	K54	125¼	§ 6200	15-6	15-6		
				6600	7.00-17-6	7.00-17-6		
					15-6	15-8		
				* 7000	7.00-17-6	7.00-17-8		
	3800	L54	137	§ 6200	7.00-17-6	7.00-17-8		
				7000	7.00-17-6	7.50-17-8		
				* 8800	7.00-18-8	7.00-18-8 Dual	2-stage, 8-leaf rear spring and auxiliary	
				§ 6700	7.00-17-6	7.00-17-6		
	3942	M54	137	7100	7.00-17-6	7.00-17-8	Double acting rear shock absorbers	
				7500	7.00-17-6	7.50-17-8	Above plus stabilizer	
				*10000	7.00-18-8	7.00-18-8 Dual	Above plus 2-stage, 8-leaf rear spring and auxiliary	

HEAVY DUTY	4100	N54	137	1½ Ton	\$10000	6.50-20-6	6.50-20-6 Dual	11-leaf rear spring and aux., hydro- vac, and on 4100, heavy duty frame
	4400	P54	161		11000	6.50-20-6	7.00-20-8 Dual	Above plus 8-leaf front spring
					12500	6.50-20-6	7.00-20-10 Dual	
					*14000	7.00-20-8	7.50-20-8 Dual	
	5100S	S54	110	1½ Ton Special	14000	7.50-20-8	7.50-20-8 Dual	
	5400S	ST54	134	Cab-Over-Engine		7.50-20-8	7.50-20-10 Dual	
	5700S	SU54	158			7.50-20-8	7.50-20-10 Dual	
	6100S	SV54	137	1½ Ton Special	*15000	7.50-20-8	8.25-20-10 Dual	
	6400S	SW54	161	Conventional				
	6500S	SX54	179					
	5100	S54	110	2-Ton	14000	7.50-20-8	7.50-20-8 Dual	
SCHOOL BUS CHASSIS	5400	T54	134	Cab-Over-Engine		7.50-20-8	7.50-20-10 Dual	9-leaf rear spring
	5700	U54	158					
	6100	V54	137	2-Ton Conventional	*16000	7.50-20-8	8.25-20-10 Dual	
	6400	W54	161					
	6500	X54	179					
	3802 Plus RPO 329	L54	137	16 Pupils	*\$7600	7.50-17-8	7.50-17-10	
	4502	R54	161	30 Pupils	\$10500	6.50-20-6	6.50-20-6 Dual	
				36 Pupils	*12000	6.50-20-6	7.00-20-8 Dual	
	6702	Y54	199	42 Pupils	\$13500	7.50-20-8	7.50-20-8 Dual	
				48 Pupils	*16000	7.50-20-8	8.25-20-10 Dual	
	6802	Z54	212	54 Pupils	\$13500	7.50-20-8	7.50-20-8 Dual	
					*16000	7.50-20-8	8.25-20-10 Dual	

\*—A plate is supplied with each vehicle showing chassis number and maximum Gross Vehicle Weight (GVW). The maximum GVW rating includes the truck chassis with lubricants, water and full tank of fuel, plus the weight of the cab or driver's compartment, body, and special chassis and body equipment, and payload. These GVW ratings are reduced per above table when tires

and/or equipment of lesser capacity are used. Series D-54 plate shows no GVW.  
 †—Base trucks, tires shown included in base price.  
 Extra ply rating and/or oversize tires and equipment are available with no increase in gross vehicle weight rating.

## **CHAPTER V**

### **GENERAL INFORMATION**

#### **MANUFACTURER'S WARRANTY**

It is expressly agreed that there are no warranties, expressed or implied, made by either the Dealer or the Manufacturer on Chevrolet motor vehicles, chassis or parts furnished hereunder, except the Manufacturer's warranty against defective materials or workmanship as follows:

"The Manufacturer warrants each new motor vehicle, including all equipment or accessories (except tires) supplied by the Manufacturer, chassis or part manufactured by it to be free from defects in material and workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any part or parts thereof which shall, within ninety (90) days after delivery of such vehicle to the original purchaser or before such vehicle has been driven 4,000 miles, whichever event shall first occur, be returned to it with transportation charges prepaid and which its examination shall disclose to its satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on its part, and it neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale of its vehicles.

"This warranty shall not apply to any vehicle which shall have been repaired or altered outside of an authorized Chevrolet Service Station in any way so as in the judgment of the Manufacturer to affect its stability and reliability, nor which has been subject to misuse, negligence or accident."

The Manufacturer has reserved the right to make changes in design or add any improvements on motor vehicles and chassis at any time without incurring any obligation to install same on motor vehicles and chassis previously purchased.

#### **TIRE WARRANTY**

The tires (not covered by the Chevrolet Standard Warranty) are guaranteed by the tire manufacturer according to the standard Tire Manufacturer's Warranty. If, in your opinion a tire is faulty, we suggest that you contact the nearest factory branch or a community tire dealer handling the make tires used on your Chevrolet.

## OWNER'S SERVICE POLICY

Upon delivery of your new Chevrolet truck, you received an Owner Service Policy from your Chevrolet dealer. Please read it carefully.

Under the terms of this policy you are entitled to receive, from any Chevrolet dealer in the U.S.A. or Canada, an inspection and adjustment, on a no charge basis, if the policy coupon is presented within 1500 miles of vehicle operation.

Any Chevrolet dealer in the U.S.A. or Canada is authorized to replace, without charge for material or labor, any parts found to be defective under the terms of the Chevrolet Factory Warranty.

Always keep the Owner Service Policy with the truck during the warranty period as it serves to introduce the owner to any Chevrolet dealer.

### OWNER SERVICE POLICY

**1. Delivery . . .** The Dealer will see that the vehicle is properly prepared before delivery to the owner, in accordance with Standard Factory instructions.

**2. Use of Owner Service Policy . . .** The Owner Service Policy introduces the owner to all authorized Chevrolet Service Stations and entitles the owner to receive service in accordance with the terms of this Policy. The owner should carry this Policy in the vehicle at all times.

**3. Installation of Parts Furnished Under Warranty . . .** Parts supplied under the manufacturer's warranty will be installed by any Chevrolet dealer in the United States or Canada without any charge for labor. The manufacturer's warranty is set forth at length in the Owner's Manual.

**4. 1000-Mile Adjustment . . .** The attached coupon, when signed by the Selling Dealer, entitles the owner to the inspection and adjustments as listed on the back of said coupon. These services are to be given free by any Chevrolet dealer in the United States or Canada upon presentation and surrender of the coupon.

**5. Inspections . . .** In order that your Chevrolet vehicle may provide maximum service and dependability, we suggest that you have it inspected every 30 days or 1000 miles by an authorized Chevrolet service station.

**6. Tourist Privilege . . .** Upon presentation of this Policy by the owner when touring, any Authorized Chevrolet Service Station in the United States or Canada will perform the services as outlined in paragraphs three, four and five regardless of where the vehicle may have been purchased.

**7. Change of Residence . . .** In case the owner changes his residence from one location to another before the warranty period has expired, the Authorized Chevrolet Service Station serving the locality into which the owner moves will, upon presentation of this Policy, render any no-charge service to which the owner may be entitled as outlined in paragraphs three, four and five.

***Owner's Manuals  
Service Manuals  
Vintage Ads  
and more...***



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